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THE CHANGE OF TYPE OF DISEASE *

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LONDON, ENGLAND

Alteration of type of acute disease—a problem which exercised our professional ancestors, notably Sydenham—has recently come under discussion especially in connection with epidemics prevalent during the war, and may therefore serve as the subject for a few remarks. Although the debate rages mainly between the epidemiologists and the bacteriologists, the outcome is of great interest to the clinician.

Sydenham, whose position as an epidemiologist has been defined by Major Greenwood,[1] pointed out that acute diseases showed (1) a long period evolution with a rise, decline and fall, extending over centuries, and (2) seasonal variations with waves measured in months so that their character and their reaction to treatment varied at short intervals, a method successful in one epidemic becoming dangerous in a subsequent outbreak. Though, as Crookshank [2] points out, Ballonius (1574) anticipated him, Sydenham also (3) postulated the theory of epidemic constitutions to the effect that a special influence—telluric or climatic—becomes dominant and impresses some peculiar features on the clinical manifestations of diseases prevalent at the time to the exclusion of other types or symptoms, the amplitude of this wave being measured in years. Greenwood translates the much discussed term epidemic constitution as meaning that the non-specific secondary infections, such as those so plentifully exemplified in measles and influenza, are as important from the point of view of morbidity and mortality as the specific causes of the disease. Sydenham, of course, had no knowledge of the *verae causae* of disease or bacteriology, but with this knowledge Hamer, following the lines of the English Hippocrates, eloquently argues that members of the "catarrhal group of diseases," namely, cerebrospinal fever, acute poliomyelitis, encephalitis lethargica and influenza, are variants of the same morbid process, i. e., diverse manifestations of the same virus, under special conditions; this represents the most extreme divergence of the epidemiologic from the bacteriologic points of view.

That the type of disease changes has been disputed and it has been asserted that the supposed change is in the mental outlook of the observers. Markham,[3] in 1864, vigorously attacked the theory that there was a change in type of disease, and controverted the view that about 1832, after the epidemic of cholera, the type of fever previously sthenic became asthenic so that bleeding was no longer well borne. He in fact suggested that the notion of a change of type of disease was largely invented, years after 1832, to explain the abandonment of bleeding in inflammations and fevers.

At the present time no one doubts that certain diseases have shown changes of type; scarlet fever is universally recognized to have become much milder; Brownlee [4] finds that though there is not any evidence that the amount of scarlet fever (or the infectivity of the causal agent) is less now than in the latter half of the last century, the mortality (or the virulence of the organism) has greatly fallen. Pneumonia is another example of a disease in which the virulence, as shown by the mortality, has increased, and the type of the disease has since the reappearance of influenza in 1889-1890 undergone some change, the disseminated form being common and the frank lobar pneumonia less frequent. The seasonal variation of type was shown in a well-marked degree by the two waves of influenza in the spring and autumn of 1918, the high rate of thoracic complications and of mortality in the second wave being associated with *Streptococcus hemolyticus* and the pneumococcus.

In the Royal Navy the spring wave of influenza was accompanied by 0.4 per cent. of complications and 0.03 per cent. mortality, whereas in the autumn wave the incidence of complications was 6.8 per cent. and of deaths 2.8 per cent.[5]

It would, indeed, be remarkable if diseases always respected the types conveniently accorded them in textbooks, for, as Sir Clifford Allbutt long ago insisted, a disease is not a fixed entity but a reaction of the body to some infection or irritant.

Alterations in the clinical features of diseases usually regarded as typical may be due to several causes. It is obvious that variations may occur, on the one hand, in the causes as regards their virulence and, on the other hand, in the resistance of the patient. A change in the clinical manifestations may therefore be explained on bacteriologic grounds, by the supposition of changes in the soil, or of changes in both these factors. The permutations and combinations thus possible would explain many changes in the character of disease; thus, a highly virulent state of the infective agent acting on a susceptible individual with greatly lowered resistance would tend to produce a fulminating attack, whereas an attenuated virus acting

* Read before the Section on Practice of Medicine at the Seventy-First Annual Session of the American Medical Association, New Orleans, April, 1920.

1. Greenwood, M.: Proc. Roy. Soc. Med. (Sect. Epidem.) **12**: 55 (July) 1919; Brit. M. J. **2**: 405 (Sept. 27) 1919.
2. Crookshank, F. G.: Proc. Roy. Soc. Med., London (Sect. Epidem.) **13**: 159, 1920.
3. Markham, W. O.: Bleeding and Change in Type of Diseases, the Gulstonean Lectures for 1864, Brit. M. J., 1864; London, Churchill, 1866.
4. Brownlee, J.: Pub. Health, London **28**: 131, 1914-1915.
5. Hill, R.: J. Roy. Sanit. Inst. **40**, 1919.

on an individual with good resistance might fail to produce any effect or cause an abortive illness, thus conferring immunity.

The difficult question arises whether or not bacteriology and changes in the resistance of the race, either comparatively permanent as the result of environment or transient from disease or other factors, will together satisfactorily explain alterations in the clinical type of disease; or whether there is some further and mysterious factor, such as is implied by some epidemiologists, which has yet to be thoroughly elucidated. Though I shrink from expressing a dogmatic opinion, the first explanation seems the more attractive.

BACTERIOLOGIC REASONS FOR CHANGE IN TYPE OF DISEASE

Bacteria may vary in their pathogenicity either as the result of external influences or spontaneously when no such factor is obvious. External conditions, such as temperature and other climatic factors, concentration of their carriers and hosts, and conditions of passage, may influence the vitality and virulence of micro-organisms. It has also been suggested that micro-organisms have cycles of infective activity following periods of rest, and that this cycle explains by its periods of high infectivity the occurrence of epidemics; the influenza virus appears to have a cycle of thirty-three weeks, and the various strains of the infective agent of measles cycles of eighty-seven, ninety-eight and 110 weeks.[6] It would naturally follow, though proof is required, that further variations in the virulence of the germ might alter the character of the clinical manifestations. Then again, the same specific organism may give rise to clinical features of varying character; thus, the influenza bacillus may be associated with symptoms of coryza, meningitis, rheumatic fever, or of typhoid fever; and this variation may be seen in the same epidemic, as in the epidemic in Hertfordshire of protean symptoms due to *M. catarrhalis* reported by Merwyn Gordon and Dunn. These variations may, it is true, be eventually explained in some other manner, namely, by the existence of some additional factor, such as an ultramicroscopic organism or by ultramicroscopic bodies of the nature of enzymes (enzyme theory of disease) associated with the bacteria.[7]

Another bacteriologic explanation for change in the clinical type of disease is naturally attractive. In a disease such as enteric fever, variations in different outbreaks may be due to different strains of the infecting organism; this has been shown by the division of enteric into (*a*) typhoid due to *B. typhosus* and (*b*) paratyphoid A and (*c*) paratyphoid B, both with a lower mortality; and so what might have been regarded as a change of type is really explained by the occurrence of different though allied infections. In cerebrospinal fever the different types of meningococci may be correlated with different clinical types; thus Dopter[8] showed that the predominant infective meningococcus before the European war was Type A (Gordon's Types I and III), and that later it became Type B (Gordon's Types II and IV); and Netter[9] correlated the greater frequency of septicemic cases and lesions such as rashes, arthritis and iridocyclitis with this change to Type B. The differentiation of the types of pneumococci is another example of the influence of different strains or types of an organism in determining different clinical types of a disease previously regarded as due to one organism. The different clinical types of bacillary dysentery due to *B. dysenteriae* Shiga and *B. dysenteriae* Flexner have been well established during the war. This explanation of different clinical types as depending on different strains or types of the infecting organism is so logical that it is tempting to adopt it widely, and perhaps especially for diseases in which the nature of the infecting organism has not yet been established.

The occurrence of secondary infections, such as the pneumococcus and *Streptococcus hemolyticus* in measles and influenza, is a powerful factor in the change of type of disease, and has already been mentioned as an explanation of Sydenham's epidemic constitutions. It may be surmised that the liability to secondary infections may depend either on a previous want of resistance in the patient or on such a virulent primary infection that the patient's resistance is at once broken down.

The influence of prophylactic inoculation in preventing the incidence and modifying the course of smallpox, typhoid and pneumonia (F. S. Lister) are too well known to require elaboration. But attention may be directed to the suggestive work of Vaughan[10] and his collaborators on the question of a nonspecific immunity conveyed by common infections, especially those of the respiratory system, against others by which the severity of the subsequent disease among those, especially town inhabitants, is diminished by a previous infection.

CHANGE IN THE RESISTANCE OF THE PATIENTS

Long ago a change of type of disease—an alteration from the "sthenic" to the "asthenic" form of fevers—was thought to have occurred as the result of the cholera and influenza epidemics of 1832 and 1833 (Watson). And the altered conditions of life entailed by the concentration in cities of persons previously living in country districts has been brought forward to the same effect, though this is rather contrary to Vaughan's contention mentioned above. In our own time influenza has exerted an influence in the form of pneumonia, at any rate to the extent of making the disseminated or bronchopneumonic type commoner.

The varying resistance of the population to disease is concerned with both the periodicity of disease and the character of the epidemics. The epidemics of measles in Great Britain occurring at intervals of from eighty-seven to 110 weeks (Brownlee) are commonly assumed to depend on the accumulation of susceptible children in sufficient numbers, though, as is pointed out above, another factor may be considered. In isolated districts where measles rarely occurs, the introduction of the infection causes a widespread and severe epidemic, as in the classical instances of the Faroe Islands (1781 and 1846), Fiji (1875 and 1907), in the neighboring island of Rotuma in 1911,[11] and in the Shetlands. These examples suggest that the absence of immunity is responsible. On the other hand, the gradual diminution in the severity of at least the outward manifestations of syphilis might be thought to depend to some degree on a general

6. Brownlee, J.: Proc. Roy. Soc. Med. (Sect. Epidem.) **12**: 77 (Aug.) 1919; Lancet **2**: 856 (Nov. 8) 1919.
7. Dixon, J. Gurney: The Transmutation of Bacteria, Cambridge, 1919, p. 153.
8. Dopter: Ann. d'hyg. publ. et. de méd. lég. Series 4 **29**:144, 1918.
9. Netter, A.: Bull. et mém. Soc. méd. d. hôp. de Paris, Series 3, **41**: 883, 1917.
10. Vaughan, V. C., and Palmer, G. T.: Mil. Surgeon **46**: 1 (Jan.) 1920.
11. Corney: Proc. Roy. Soc. Med., London (Sect. Epidem.) **6**: 130, 1913.

approach to relative immunity; but here the question of treatment comes in, as it does in regard to diphtheria, which has also been thought to have independently become less virulent.[12]

The resistance of individuals and races is obviously influenced by environment, such as overcrowding, overwork, bad food and alcoholism, and thus both the incidence and the severity of the disease—conditions which must be distinguished from each other—become increased. Among the Italian armies during the war a tendency to get manifestations of scurvy in various infections was noted. In his recent Lumleian lectures at the Royal College of Physicians of London, Sir John Rose Bradford expressed his opinion that war nephritis, which has been regarded as a special form, was only acute nephritis occurring on a large scale in young and previously healthy men. It may, however, be difficult to differentiate between the effect of improved hygienic conditions, on the one hand, and of diminution in the virulence of the infecting organism, on the other; thus, the disappearance of typhus from Glasgow and other towns was naturally ascribed to improvement in the living conditions; but Brownlee points out that this disease simultaneously subsided in the West Highlands and Ireland, where no such sanitary alterations occurred, and argues that the virulence of the infecting organism became attenuated.

EXPERIMENTAL STUDY OF THE NASOPHARYNGEAL SECRETIONS FROM INFLUENZA PATIENTS

PRELIMINARY REPORT *

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This experimental study of the nasopharyngeal secretions from influenza patients was made during the course of one and a half years in three successive periods. The first period coincided with the epidemic wave of 1918-1919. During this period were studied actual cases of acute uncomplicated influenza and persons who had never been affected. The second period embraced the late autumn of 1919, during which influenza did not prevail in New York in epidemic form. During this interepidemic stage, healthy controls were studied. The third period, during the winter of 1920, saw a return of the epidemic. At this time additional cases of the disease were available for investigation.

By proceeding in this manner we hoped to check our results for each period against one another. As the sequel will show, we believe we succeeded in this undertaking, with the consequence that we are enabled to present our findings with perhaps a degree of confidence not otherwise appropriate.

In planning our experiments we had in mind the possible presence, in the nasopharynx of persons suffering from acute epidemic influenza, of some agent the effects of which might be noted in animals.

In considering the criteria of activity of this agent, we thought in the first place of the well known phenomenon in man of leukocytic depression, involving especially the mononuclear cells, during the acute influenzal infection. In the next place, we had in mind changes of a more or less pronounced but possibly transient character, arising in the lungs, which might conceivably predispose to the severe pneumonias that often accompany as a secondary or concurrent infection the influenzal attack.

The materials with which we worked were the saline washings from the nose and throat. We secured these materials from eight cases of influenza within the first thirty-six hours of the disease, and from twelve cases at later stages, namely, either during convalescence or the period of the postinfluenzal pneumonia. In addition, fourteen persons, during the epidemic or interepidemic periods, believed never to have had influenza were washed in the same manner and their washings studied.

Full grown rabbits were used for inoculation, and no rabbit suffering from snuffles or any detectable disease was employed. All animals were subjected to preliminary blood counting, temperature taking and weighing, and any showing variations beyond the average were discarded. These observations were made on three to seven successive days previous to inoculation.

The inoculations were made directly into the lungs by means of the intratracheal catheter; 3 c.c. of material was the usual dose for a 2.5 to 3 kilogram rabbit, and consisted of (*a*) the unfiltered nasopharyngeal washings, (*b*) the filtered washings, (*c*) lung tissue suspensions, filtered and unfiltered, from previously inoculated rabbits, and (*d*) similar lung tissue preserved in sterile 50 per cent. glycerin.

It is desirable, in this place, to state that unfiltered washings were employed in the expectation that they could be purified, or rather deprived of their ordinary bacteria, by successive animal passages. It was believed that if this could be accomplished there might be a better chance of preserving and, possibly, bringing to multiplication some other variety of microorganism, more resistant and virulent perhaps, which would give to the washings from cases of uncomplicated influenza a quality lacking in others. It was, of course, realized that not in every instance could this favorable outcome be looked for. Now and again it was to be expected that a virulent pneumococcus or streptococcus would set up a pneumonia to which the animal would succumb. But if the ordinary bacteria could be suppressed by animal passages in a few instances and something survive which produced definite changes in the structures of the rabbits—in the blood and lungs, for example—the washings from cases of influenza might thus be characterized in a way distinguishing them in effects from the washings of another origin. In this manner the operation of a usual pathogenic agent is to be deduced, although it might not be possible to determine certainly that this agent is the inciting microbic agent of influenza. However, if a certain correspondence in tissue and other effects can be shown to exist between the person suffering from influenza and the rabbit inoculated with materials originally derived from influenza cases and free from all ordinary bacteria, a probability as to the nature of the pathogenic agent is introduced into the calculation which encourages further investigation along the indicated lines.

There were inoculated into the lungs of rabbits the unfiltered nasopharyngeal secretions from five cases

12. Duncan, E.: Change of Type in Disease, Glasgow M. J. **90**: 1, 1916.

* From the Laboratories of the Rockefeller Institute for Medical Research.

during the first epidemic and three during the second, in the first thirty-six hours of the disease; and from eleven cases during the first epidemic and one during the second in the later stages of the affection.

RESULTS OF EXPERIMENTS

The following effects were induced by the materials from seven of the eight fresh cases, but not by any of those from the twelve cases examined after thirty-six hours.

Clinical Effects.—From twenty-four to forty-eight hours after inoculation, fever developed, associated with the ordinary signs of indisposition in a rabbit, such as listlessness and ruffled hair. This was accompanied by conjunctivitis, varying from injection to pronounced catarrhal inflammation. The striking feature, however, was the definite and often marked leukopenia resulting from the depression of the mononuclear cells, as shown in the accompanying chart. If the condition was allowed to run its natural course, these symptoms endured for three days, the animal then returning to normal. If the rabbit was killed — for if the condition remained uncomplicated by ordinary bacterial infection none died— an unusual pathologic picture was revealed.

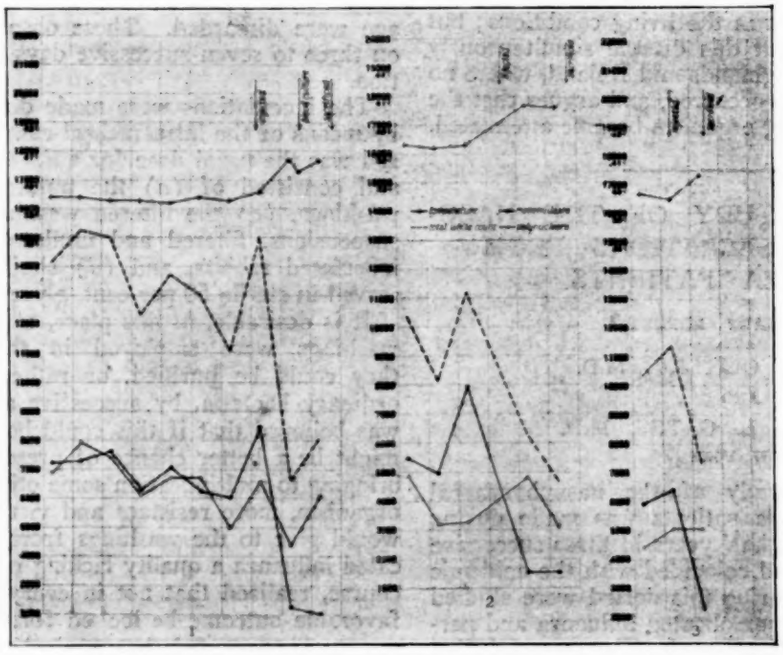

Chart illustrating effect on blood count. To be noted are the rise in temperature and the depression in the total white blood cell count caused by a deficiency of mononuclears. 1, first rabbit passage of the nasopharyngeal washings from a fresh case of uncomplicated influenza; also the normal curve of this animal prior to injection; 2, second rabbit passage; 3, seventh rabbit passage.

Pathologic Effects.—The respiratory organs were affected to the exclusion of all other structures. No pleuritis or exudate in the pleural cavity was evident. The lungs were voluminous and edematous, and had a mottled, hemorrhagic appearance. The hemorrhages on the surface, beneath the pleura, were diffuse or discrete, occupying areas of a few millimeters in extent, or covering a large part of a lobe. In addition, minute petechiae occurred. On section of lungs the cut surface revealed a hemorrhagic edema; it dripped a blood-stained, frothy fluid. The hemorrhages again were either diffuse and large or discrete and small; in the latter instance they were numerous.

Microscopic sections of the lungs were made through various parts, the base, periphery or hilum, and as a rule were carried through the hemorrhagic foci. The hemorrhages were either diffuse, invading large areas of pulmonary structure, or were localized to small areas, or seen as extravasations into the interalveolar and intra-alveolar structures. The edema was pronounced: the alveoli were filled with serum, and there was a serous exudation in the interalveolar strands. The lung structure showed a cellular exudate, comprising polymorphonuclear cells showing usually large eosinophilic granules; large cells of an alveolar type, probably desquamated bronchial epithelium, and in the interalveolar strands, mononuclear cells. Some fibrin was present as well. The bronchi were partly filled with erythrocytes, fragments of degenerated and exfoliated epithelia, and leukocytes. Their walls here and there had lost their epithelial lining, and were hyperemic and thickened. The capillaries were distended with blood.

No ordinary bacteria were seen in impression films of the lung tissue or in sections stained by Gram's or MacCallum's method, or in cultures of the tissue.

If the clinical effects observed continued for forty-eight hours, the animal as a rule was killed, and the affected lung tissue was ground, suspended in saline solution, and injected into the lungs of a new series of rabbits. In this way the clinical and pathologic effects were passed through as many as fifteen successive rabbits.

These effects were obtained only with the nasopharyngeal secretion in seven of eight patients, collected within thirty-six hours after the onset of the first symptoms. Twelve cases of influenza, in which the washings were collected forty-eight hours after onset and in the stage of convalescence or of secondary pneumonia, failed to give the same results.

Control experiments were made by injecting into the lungs of rabbits saline solution, suspensions of normal rabbit lungs, normal rabbit serum, foreign protein, such as human ascitic fluid, bacteria of the ordinary species, including Pfeiffer's bacillus and its poison as prepared by Parker's method, and finally the nasopharyngeal secretions from fourteen persons free from influenza and tested in the epidemic and interepidemic periods. Of the latter, seven suffered from early or later stages of coryza. None of the animals inoculated with the control materials or these secretions showed the same clinical and pathologic action; a few gave a polynucleosis with frank lobar pneumonia; others, a mononucleosis without visible lung involvement, and still others, inconstant effects.

A closer study was then made of the agent causing these phenomena, and it was found that although it was extremely difficulty to secure these results with filtrates obtained directly from the patient's secretions, they could be obtained by first passing the material through a series of rabbits. Then repeated filtration through Berkefeld "V" and "N" candles between rabbit passages did not hinder the development of the typical clinical and pathologic effects.

We determined that the agent was able to resist the action of sterile 50 per cent. glycerin for nine months, but probably not for a much longer period. In one series of experiments glycerinated material free from ordinary bacteria was passed with typical effects through ten successive rabbits.

No case of the uncomplicated effect in the rabbits terminated fatally. By "uncomplicated" we mean that cultures of lung tissue after the sacrifice and of blood during the illness yielded no growth of ordinary bacteria.

But although these effects were produced repeatedly in rabbits with material free from ordinary aerobic bacteria, the latter micro-organisms were encountered occasionally in the course of the experiments.

Those animals in which the inoculation terminated fatally did yield growths of various bacteria from the lung tissue, thus: pneumococcus, Group IV, eleven times; atypical II, three times; *M. catarrhalis,* a gram-negative hemoglobinophilic organism resembling Pfeiffer's bacillus, and *B. pyocyaneus,* each twice; *Streptococcus viridans,* streptothrix, and *B. coli-communis,* each once. Generally the same organism was not found regularly in the consecutive rabbit passages of a series of transmissions. For example, in the filtrate series of Case 17 the fifth passage showed a pneumococcus Group IV, the seventh and eighth *B. pyocyaneus,* and the tenth a gram-negative, hemoglobinophilic micro-organism, resembling Pfeiffer's bacillus. The other passages were free from such bacteria. In three of the seven series of transmissions, the ordinary bacteria in the secretions were suppressed completely, and all the animal passages remained free from them.

The pathologic picture when complicated by these ordinary bacteria showed severe, extensive lobar or bronchopneumonia with fibrinous and exudative pleurites and abscess formation and, as a rule, a rapid decline and death of the animal.

A series of investigations was undertaken in which an effort was made to reproduce the last mentioned conditions experimentally. Rabbits were injected with the influenzal material intratracheally and later with small nonpathogenic doses of the pneumococcus, Pfeiffer's bacillus, and *Streptococcus viridans* intravenously. In these animals the bacteria localized themselves in the lungs, producing extensive lobar pneumonias or bronchopneumonias with pleurites and, as a rule, leading to death. Hence apparently this material obtained from the nasopharyngeal secretions in early influenza diminishes the resistance of the rabbit's pulmonary structures against invasion by these common micro-organisms.

CONCLUSIONS

From the evidence obtained in this study, extending over one and a half years, it would appear that there occurs a specific substance in the nasopharyngeal secretions in cases of epidemic uncomplicated influenza. This substance seems to be present only in the early hours of the disease. It has not been found later than thirty-six hours after the onset, nor in cases of secondary pneumonia, nor in secretions from persons free from the syndrome of influenza either during the epidemic or during nonepidemic periods.

With this substance we have induced a clinical and pathologic condition in rabbits, affecting the blood and pulmonary structures mainly, which could be maintained and carried through at least fifteen successive animals. For this reason, and also because of the dilution between passages and the shortening of the incubation period from rabbit to rabbit, we are led to believe that we are dealing with the actual transmission of a multiplying agent rather than with a passive transference of any original active substance.

This active substance is filtrable, and resists the action of sterile 50 per cent. glycerin for nine months, but probably not for a much longer period.

The manner in which the bacteria of ordinary species, such as the pneumococcus, the Pfeiffer bacillus, *Streptococcus viridans* and others are encountered during the course of the transmission experiments and during the experimental reproduction of the condition described justifies the opinion that these micro-organisms are secondary in effect. The essential effects are produced by a substance wholly unrelated to these bacteria.

The similarity that exists between these effects in rabbits and those occurring in man lays a basis for further investigation on the inciting agent of influenza.

It may be stated here that during the course of these experiments we have seen in cultures, both from the lung tissue of affected rabbits and in the filtered nasopharyngeal washings from cases of influenza, tiny bodies, almost invisible, which decolorize by Gram's method, and which stain generally with difficulty with nuclear dyes. This phase of the subject is still under investigation.

THE BACTERIOLOGY OF THE URINE IN RENAL TUBERCULOSIS *

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It has long been generally believed that the urine in tuberculosis of the urinary tract is sterile. On this basis one feels fairly safe in assigning to tuberculosis those cases in which there is a cystitis with pyuria and a negative culture. But in view of our experience in the Genito-Urinary Department at the Massachusetts General Hospital, it has seemed worth while to look into the question with some care.

According to Rafin,[1] it was Melchior who, in 1895, asserted that the urine in urinary tuberculosis was aseptic, a statement which was confirmed by Nogués [2] in 1899. Meanwhile, in 1897, Albarran [3] maintained that tuberculous urine was almost always secondarily infected.

This apparent discrepancy of opinion on the part of competent observers may be explained by the work of subsequent investigators. Sutter,[4] in 1907, studied seventy-eight cases of urinary tuberculosis and obtained positive cultures in nine, of which seven patients had been previously catheterized or otherwise subjected to instrumentation. In the same year Wildbolz [5] found secondary infection in 22 per cent. of his cases, but regarded it as due to previous local treatment. In 1911, Pousson [1] reported twelve secondary infections

* From the Genito-Urinary Department of the Massachusetts General Hospital.
* Read at the twelfth annual meeting of the American Urological Association, New York, March 23, 1920.

1. Rafin: J. d'urol. méd. et chir. **1**: 777, 1912.
2. Nogués: Tr. IV Cong. d'urologie.
3. Quoted by Rafin (Footnote 1).
4. Sutter: Ztschr. f. Urol., 1907.
5. Wildbolz, H.: Folia urolog. **1**: 401, 1907.

in thirty-two cases. This work was followed in 1912 by that of Rafin,[1] who made 239 bacteriologic examinations of the urine in urinary tuberculosis. The female patients were catheterized, but in the male the urine was voided into a sterile flask after local antisepsis and the passage of the first portion of the urine. Positive cultures were obtained in seventy-one or 29.6 per cent., the staphylococcus being found fifty-eight times, the colon bacillus three times, and streptococci twice. Rafin ascribed his positive findings, as did his predecessors, to the fact that previous instrumentation, improperly carried out, had been performed. None the less it seems clear that the evidence thus far obtained strongly favors the view that tuberculous urine is generally sterile.

In 1918, Spooner [6] made a very careful bacteriologic study of ten tuberculous kidneys freshly removed at operation. While he could demonstrate the tubercle bacillus by one means or another in all, he found evidence of secondary infection in none. Cultures from seven urines of patients suffering from renal tuberculosis were examined. In three instances, catheter specimens of the bladder urine showed organisms other than the tubercle bacillus. In four cases the urine obtained from the ureter on the infected side showed no growth on ordinary culture mediums after forty-eight hours' incubation. Spooner concludes that whereas the urine from a tuberculous kidney, if obtained from the ureter, shows no evidence of mixed infection, the bladder urine is often contaminated by other organisms.

Recent advances in cystoscopic and bacteriologic technic now enable us to study this interesting and important question with more accuracy than has heretofore been possible. Whereas formerly the specimens were generally obtained only from the bladder, often without a catheter, they are now obtained not only from the bladder and by catheter, but from the separate kidneys as well. Furthermore, we have come to place little or no reliance on the culture of a specimen of urine, having found that contaminating organisms from one source or another may and often do vitiate the results. Instead, dependence is now placed largely, if not entirely, on smears of the centrifugalized sediment of the fresh urine, a technic for the perfection of which we must thank our colleague Dr. E. G. Crabtree. By this means we are able to demonstrate not only the tubercle bacillus in the great majority of cases, but also the presence of secondary organisms.

RESULTS OF OBSERVATIONS IN SIXTY-THREE CASES

It has therefore seemed worth while to examine the records of hospital and private cases which have been so studied. We have accordingly collected sixty-three instances, with more or less complete data. In all, the diagnosis has been proved either by finding the tubercle bacillus in the urine, by operation, or at necropsy. The urine from the tuberculous kidney has been centrifugalized, and the sediment stained and examined in all cases from which it could be obtained, that of the healthy side in the great majority. A smear of the bladder urine has been examined in many, chiefly in those cases in which the tuberculous ureter could not be catheterized. In many of these cases, previous instrumentation of one sort or another, performed not always *secundum artem*, had been carried out. It is impossible to say whether or not this has influenced the results, but we firmly believe that while it may have vitiated certain bladder findings, it has had little or no effect on the kidney urines.

Cultures from the bladder were made in thirty cases with fifteen positive results, in ten of which the symptoms dated anywhere from one to ten years. This would suggest either that the antiquity of the disease was a factor, or that during these years secondary infection had been invited by means of the promiscuous and futile local treatment to which many of these patients had been subjected.

Cultures of the right kidney urine were made thirty-one times with seven positive results, and twenty-eight times from the left kidney with six positive results. In these, as in the bladder urines, the colon bacillus was most commonly found. The data as to the duration of symptoms in these particular instances are of no special value. It will be observed, however, that whereas in the bladder urine the cultures were positive in 50 per cent., in the kidney urines positive results were obtained in but 22 per cent., indicating a greater ability of the kidney to remain aseptic than the bladder. This statement is somewhat emasculated by the fact that of the thirteen positive cultures from the kidney, eight were on the healthy side and only five on the tuberculous side. We have previously stated, however, that comparatively little reliance can be placed on the results of cultures, and these data are given only for what they are worth.

Smears of the bladder urine showed secondary infections in twenty-one cases, and as in the cases from which cultures were made, there were more with a duration of years than of months.

Smears from the kidney urines were made in all cases in which it was possible to catheterize the ureter. Secondary organisms were found in only five instances, three times on the right, of which two were on the healthy side; twice on the left, of which one was from the sound kidney.

Combining the results of cultures and smears from the separate kidney urines, it is found that positive results were obtained on the healthy side in eleven cases, and on the tuberculous side in seven: a total of 28.5 per cent. of secondary infection of the kidney urine in sixty-three cases.

While we have found no adequate explanation for the popular belief that tuberculous urine is sterile, it has been suggested, but never demonstrated so far as we know, that this comparative asepsis is due to the excessive acidity of such urine. In our cases the reaction of the bladder urine to litmus was tested in all at least once, often many times. In twenty-eight of the sixty-three the reaction was alkaline either once, several times or on all occasions (twelve cases). In some of these urines, decomposition had doubtless occurred, owing to a too prolonged residence in the laboratory; in others, an accurate chemical test may well have shown that the alkalinity to litmus was in reality chemical acidity. A few observations made by us on fresh tuberculous urine obtained by ureteral catheter have shown a maximum hydrogen ion concentration of 5.3 while some tests made by Henderson and Palmer [7] showed a concentration of only 6.7, and even 7.4. This is a far lower acidity than was found by these observers in a number of other patho-

6. Spooner, L. H.: J. M. Research **39**: 59 (Sept.) 1918.

7. Henderson, L. J., and Palmer, W. W.: J. Biol. Chem. **13**: 393, 1912-1913.

logic conditions. On the other hand, Labbé and Vitry,[8] in 1914, after an elaborate investigation of the comparative total acidity of the urine in tuberculosis and in other conditions, found that this acidity was greatest in the tuberculous cases. It would appear, therefore, that while tuberculous urine is generally acid, it seems never to be excessively so, and may at times be neutral or even alkaline.

That the reaction of tuberculous urine in and of itself is not hostile to the growth of the colon bacillus is shown by our own clinical data (in one kidney large numbers of tubercle and colon bacilli were found in the same smear). We have also found that, after examination, specimens of tuberculous urine which have been left standing in the laboratory often show a profuse growth of organisms from accidental contamination. Furthermore, Shohl and Janney[9] have demonstrated experimentally that the colon bacillus will grow in urine with a fairly wide range of hydrogen ion concentration, the optimum for growth being from 6.0 to 7.0. On the other hand, bacillary growth is inhibited in urine with acidity of from 4.6 to 5.0. As the latter figure shows an acidity but slightly greater than that which we have ourselves obtained, it would suggest that in some instances at least the acidity of the urine is such that while secondary organisms may not be actually killed, their growth is at least inhibited. The few observations that we have made have shown the desirability of further study, and this we hope to take up at some future time. It has been suggested that some endotoxin secreted by the tubercle bacillus may be a factor in the production of asepsis. This may eventually prove to be the case; but we find that the knowledge of such an endotoxin is still meager, and no statement at all has been made as to its possible bactericidal properties.

There is no question that infection of one kidney exerts an inhibitory and depressive influence on its uninfected mate. Albarran long ago made this observation, and it has since been confirmed by many others. Today our more precise methods of measuring kidney output enable us to gage this toxemia before the excision of the diseased kidney, and to demonstrate its elimination after operation. Possibly this depressive effect on the healthy kidney accounts for the fact that its urine is found to contain secondary organisms more often than does that of the tuberculous kidney. This theory by no means, however, furnishes a satisfactory answer, for it does not tell us why the tuberculous kidney, whose resistance was so low at the outset that the tubercle bacillus obtained a foothold and which has been still further depleted by its ravages, should not more often play host to other organisms.

Those who hold to the view that bacteria can pass from bladder to kidney by way of the ureteral lymphatics may offer this as a possible explanation. The blocking of these lymphatics by the early and extensive involvement of the ureter in renal tuberculosis would certainly help in keeping such an organ sterile; and by the same token the unimpaired lymphatics of the healthy kidney would offer an explanation for the more frequent infection of this organ. We believe, however, that organisms reach the kidney through the blood stream in the majority of instances.

8. Labbé, H., and Vitry, G.: Presse méd. **22**: 437, 1914.
9. Shohl, A. T., and Janney, J. H.: J. Urology **1**: 211 (April) 1917.

CONCLUSIONS

1. Cultures of urine are unreliable. Far greater dependence is to be placed on a properly prepared smear of a fresh sediment.

2. Cultures and smears have shown positive results from the bladder urine in 55.3 per cent., and from the kidney urine in 28.6 per cent. The sound kidney has yielded positive findings more often than has its tuberculous mate.

3. Tuberculous bladder urine is generally acid, but may be neutral or alkaline. The kidney urines, so far as studied, have been strongly acid.

4. In general, it may be said that there is as yet no adequate explanation for the comparative asepsis of tuberculous urine. Its usually high acidity is probably an important factor. The greater number of contaminations in the urine from the sound kidney may be due to the toxemia produced by its tuberculous mate; but we can give no reason for the sterility of the latter organ.

5. Our results show conclusively that while a negative smear or culture from the bladder in a case of cystitis and pyuria points strongly to tuberculosis, a positive smear or culture from the bladder, or even from the kidney urine, does not exclude this disease.

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TESTICLE TRANSPLANTATION

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The term "interstitial gland" was first brought to our attention by articles in the press referring to Serge Voronoff of Paris, who was said to have transplanted these organs from apes to man, with brilliant results.

"Interstitial" cell was the term used in an editorial[1] in THE JOURNAL, in which the work of Steinach on the development of secondary sexual characters was discussed. The editorial concluded that:

> The sum total of the foregoing observations tends to confirm the view, expressed by several authors,[2] that the essential factors for the production of the genital hormones are the "interstitial" cells found in both the testes and ovaries of various animals. The genital glands are thus believed to contain gland cells of two distinct and functionally independent types. These interstitial cells, however, are apparently not universally present. It has been shown that, by means of the roentgen rays, it is possible to destroy the germ cells in either testes or ovaries, so rendering the animals sterile. Whether the interstitial cells, which are not destroyed by these rays, are originators of the unique effects in respect to secondary sexual development and the awakening of mammary activities remains to be determined.

The various reports of Lydston first attracted our attention to the procedure of implanting testes from the dead body to the living. As there are on the average three executions in this prison each year, valuable material for this kind of work became available.

Our first implant was done in August, 1918. Altogether, operations have been performed in eleven cases

1. The Modification of Secondary Sexual Characters, editorial, J. A. M. A. **62**: 618 (Feb. 21) 1914.
2. Starling, E. H.; Human Physiology, 1912, p. 1362.

with human material, and five with testicles removed from young rams. The time elapsing since the use of the animal tissue has been too short to make any deduction as to its value.

In five patients, only one testicle was implanted into the scrotum, while in six others, double transplantation was performed. Results have been apparently as good with the single as with the double graft. One whole testicle of a ram was embedded in the scrotum of each of two patients, but they began to slough in seven and sixteen days, respectively. One came away entirely, while a small part of the other remains after six weeks. In three other cases, only half of a ram's testicle was used, but in all, sloughing began seven days after the operation.

With the human material the implant, denuded of the parietal tunica vaginalis, was in three cases placed in a bed made in the scrotal tissues; in seven, testicles were grafted on the atrophied gland of the recipient; and in one double implantation, one testicle was embedded in the right scrotum, and a denuded surface of the other sewed on a similar section of the gland on the left. It is believed that the engrafting gives better results than the embedding.

These operations were performed for the most part with local procain anesthesia, although spinal anesthesia also was used.

REPORT OF CASES

CASE 1.—The first patient operated on, aged 25, rather dull mentally and inactive physically, had had both testicles injured by a kick five years before. A double transplantation from a negro, aged 27, apparently had a beneficial effect on him, in that he became more active, talked more, wrote better letters, comprehended jokes, and had more sexual activity than before. After leaving the prison he was employed in a lumber camp, where the superintendent stated that he was considered better than the average laborer, and that he was quite industrious and performed the required work very satisfactorily. This contrasts markedly with his condition before operation.

CASE 2.—A man, aged 50, had atrophied testicles as the result of orchitis following mumps. His sexual ability was greatly impaired, leading to domestic unhappiness and divorce. One testicle taken from a Mexican, aged 27, was implanted in him in February, 1919. Five days afterward he had an erection and continued to have them nightly. He said that his general health and outlook on life were better than they had been for years. Three months after the operation the implant was reduced slightly in size. Six months afterward it became the size of a cherry, and the patient reported that sexual desire was somewhat decreased as compared to what it had been a few weeks after the operation. In November, eight and one-half months after the operation, the patient was induced to allow the implant to be removed. It was submitted to the Department of Pathology of the Medical School of Stanford University, where Dr. W. Ophuls rendered the following report: "Sections show that the testicle is entirely necrotic, the necrosis involving all epithelium and the connective tissues. In the periphery there has been a slight ingrowth of cellular connective tissue through the necrotic capsule. Considerable hematoidin in necrotic mass."

CASE 3.—H. K., aged 54, noticed declining sexual activity as well as mental languor, accompanied by testicular atrophy following a traumatic orchitis in 1916. June 20, 1919, a double testicle graft was performed, the material having been taken from a white man, aged 26. On the second and third day after the operation, there was only a tendency toward an erection, but on the fourth day there was a satisfactory one. Every night thereafter there was sexual manifestation, and four weeks afterward he had an ejaculation. No spermatozoa were found on microscopic examination. The man noticed an improvement in his eyesight. This improvement was verified by the visiting oculist of the prison, who examined his eyes several months after the operation, and compared his findings with the patient's glass prescription of several years before. The oculist stated that there was an improvement of 50 per cent. The patient's whole attitude changed for the better. He showed more vitality and aggressiveness. He now moves more quickly, and is jubilant, whereas before he was slow and languid. Recently under erotic stimulation he has had strong erection and orgasm. A recent examination of the grafts reveals them somewhat reduced in size, and the juncture between the graft and the patient's testicle is plainly palpable. The patient has gained 45 pounds, feels fine, has continued sexual desire, and says that his strength is as good now as it was when he was 40 years old.

CASE 4.—B., aged 72, unmarried, had never had normal sexual impulses, sexual desire being almost unknown to him during his whole life. He came to prison for lewd and lascivious conduct with a minor child. His health had not been good for the last few years, and he was a frequent inmate of the prison hospital for various complaints attributable to his age. June 20, 1919, a double testicle graft was performed, the donor being an Indian boy, aged 19. The patient had an erection the third night after the operation, the first one that he had experienced for several years, according to his own statement often repeated. His general demeanor changed, and his improvement was noticeable to all with whom he came in contact. His voice became deeper and stronger, and he often gave expression to the good state of his health. This changed condition has persisted, and now after ten months he continues to feel well and vigorous, and to have frequent erections. He has not been ill or in the hospital since the operation, although for six months preceding the graft our records show that he had been in the hospital for two or three days, with some complaint, every month.

In this case there has been some sloughing from both sides of the scrotum, and numerous long strings (tubules) were expressed. Much of the graft, however, was retained. These tubules showed degeneration.

The results of testicle transplantation in the other seven cases have been somewhat similar, except that in two of them little beneficial effect was noted. One of these two experienced some improvement, but nothing so marked as in the others. In the other patient there was a change of voice from a high tenor to a low tenor, reported to us by the choir leader.

COMMENT

It has been our custom to have our patients write reports of their condition each month, and these we have on file. At first it was thought that possibly the operation alone would have the psychologic effect of their writing favorable letters, and expressing themselves as greatly benefited. But we do not think that such, if it were the case, would persist after many months, as it has in these patients. A dissatisfied patient usually does not delay long in letting the operator know about it.

The results of the sheep testes transplantation, so far, are not encouraging, although one man, aged 65, seems to have been benefited. Much of the implant sloughed out.

Judging from our limited number of cases, the transplantation of human testicles has a decidedly beneficial effect on the well-being of the patient. We do not believe that the implant lives, as demonstrated in the second case cited above.

Probably during the process of necrosis, certain bodies are given off into the lymphatics or blood stream which stimulate the patient in some unknown way.

We are unable to determine whether these beneficial effects are due to any action of the interstitial cells of Leydig or any other definite part or parts of the

testicle, although we have certain evidence which seems to show that possibly the interstitial cells have more effect than the seminiferous structures. On microscopic examinations of the testicle to be implanted in Case 11 the epithelial cells of the seminiferous tubules were vacuolated and more or less degenerated. In places the intertubular tissue was dense and cellular. There were small islands of these cells scattered about, which might have been interstitial cells. They were relatively large, with rounded nuclei. The same tissue engrafted into a eunuchoid, aged 43, caused sexual desire to appear, whereas it had not been present before.

The length of time which these beneficial effects last has not been definitely determined by our work. It is probable that it lasts more than a year. All our patients that are benefited are still enjoying this improvement.

We do not make any claim that this procedure will increase longevity. This would be hard to establish, although we feel that any one that enjoys good health and vigor, and takes pleasure in living, will outlive a person with the opposite characteristics.

As sexual manifestations are a good indicator of one's state of health, we believe, judging from these as well as other indications, that beneficial effects may be produced by testicle transplantation.

BETANAPHTHOL POISONING IN THE TREATMENT OF HOOKWORM DISEASE *

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In recent years it has been discovered that betanaphthol is useful in the treatment of hookworm disease. The dose of 0.2 to 0.5 gm., usually recommended for internal medication, has been regarded as only slightly toxic to the patient. Thymol and oil of chenopodium, the other two drugs commonly employed in the treatment of hookworm disease, have always been considered more effective than betanaphthol, but the dosage generally recommended produces toxic symptoms that are both more frequent and more severe than those caused by betanaphthol. Theoretically, betanaphthol should be a valuable addition to the anthelmintic armamentarium, if it can be proved efficacious and nontoxic.

Bayma and Alves [1] have established a new method for treating hookworm disease with betanaphthol, using larger doses than had before been employed. Their patients, treated in a hospital under careful supervision, received a preliminary saline purge and, on the next day, 6 gm. of betanaphthol in divided doses: 1 gm. every fifteen minutes until 6 gm. were taken. A final saline purge was given two hours after the last capsule of betanaphthol, on the last day of treatment. They report 85 per cent. of cures under this method, and no bad results from the large dose.

Gonzaga and Lima,[2] under the direction of Dr. Neiva of the sanitary service of São Paulo, Brazil, have slightly changed the Bayma-Alves treatment, to render it more appropriate for field work on a large scale. In their method the preliminary purge is omitted, 6 gm. of betanaphthol are given (all at one time) early in the morning, and the dose is repeated for three successive days. Throughout treatment the patient receives only a light diet. Two hours after the last dose of betanaphthol, a saline purge is administered.

The report of Gonzaga and Lima is most encouraging. It states, in brief, that betanaphthol, in the heavy dosage which they used, was practically nontoxic, and was almost as efficacious as thymol—much more so than oil of chenopodium. From among 400 heavily infected cases treated by this method, 73.5 per cent. of cures were effected, and no severe toxic symptoms were encountered.

FIELD EXPERIMENTS WITH LARGE DOSES OF BETANAPHTHOL

In view of these interesting developments from betanaphthol treatments, and in order to test the efficacy and toxicity of large doses of this drug in the treatment of hookworm disease, a series of four experiments involving, in all, seventy-nine cases, was undertaken.

Experiment 1, carried on among a representative group of twenty-nine laborers (nineteen adults and ten children) on a coffee fazenda near Ribeirao Preto, São Paulo, Brazil, included nearly equal numbers of males and females. The children were between 6 and 14 years of age. The average hemoglobin of the group was 63.2 per cent. There were no cases of malaria on this fazenda, no palpable spleens among the group, none of the patients had had intermittent fever in at least ten years, and there was no record of malaria having been in the valley for many years. Gonzaga and Lima's field treatment dosage was adopted. For persons from 20 to 50 years old, one dose of 6 gm. of Mallinckrodt's sublimated betanaphthol was given on three successive mornings (with a graduated dose for children), in hard gelatin capsules with a little water. The final dose was followed after two hours by a saline purge. Symptoms produced by treatment were mild and transient; practically no vomiting occurred. A fresh specimen of urine was obtained every morning from each patient; no highly colored, bloody or smoky urine was found. The conclusion from Experiment 1 was that betanaphthol in 18-gm. doses is only slightly toxic.

Experiment 2 was carried out to obtain a larger series of cases. Nineteen adults and eleven children—Brazilians, mulattoes and negroes—on another fazenda were selected. There had been a few cases of malaria on this fazenda, in two years, and the group included two cases of severe anemia. The average hemoglobin was 69 per cent. The drug, dose and method of administration were all the same as in Experiment 1. Except for one case (Case 1), which will be discussed in detail later, no symptoms appeared as a result of treatment. Most of the patients worked in the harvest field throughout their three days of medication.

In Experiment 3, there were ten men, suffering from trachoma or other chronic eye disease, all of them field laborers from coffee fazendas in the interior of the state of São Paulo. The races chiefly represented were Italian and Brazilian. Sixty-seven per cent. was the average hemoglobin of the group, some members of which had suffered previously from malaria. The same method of treatment and the same

* From the Laboratory of Hygiene, Faculty of Medicine and Surgery of São Paulo.

1. Bayma and Alves: Publicações do Serviço Sanitario do Estado de São Paulo, N. S. **1**: 65, 1918.
2. Gonzaga and Lima: Publicações do Serviço Sanitario do Estado de São Paulo, N. S. **1**: 1, 1918.

dosage of betanaphthol were adopted as in the preceding experiments, but the drug was a Parke, Davis & Co. preparation, already mixed with charcoal, and put up in 0.5-gm. doses in gelatin capsules. Symptoms following treatment were extremely slight and transient. One characteristic was common to all ten cases —increase in the transitional cells. One man (Case 2, to be discussed later) suffered marked destruction of red blood cells, as revealed by blood and urine examinations.

Experiment 4 had as its chief object a careful study of the urine pigment which, Experiment 3 had shown, sometimes turned brown or black on standing. A new group of ten men received exactly the same treatment as that given in Experiment 3. Mallinckrodt's sublimated betanaphthol was used, as in Experiments 1 and 2. The symptoms following treatment, as in Experiment 3, were negligible, except in the case of one man (Case 4), whose history will be discussed later.

HISTORY OF CASES SHOWING BETANAPHTHOL POISONING

CASE 1.—As has been said, in Experiment 2 there was practically entire absence of symptoms following treatment, except in one instance: A mulatto, aged 10 years, son of a colonist on a fazenda in the far interior of São Paulo, had had severe malaria, from which he had never really recovered. He had nevertheless been obliged to work all day in the fields. When he came under observation, he was weak, pale and listless; his spleen was two finger breadths below the costal border, was firm and not tender, and his urine proved negative for albumin by the acetic acid test. The developments of this case were so striking, and in such contrast to those of the other cases in Experiment 3, that they are given in detail.

The boy was given 4 gm. of betanaphthol at 7 a. m., March 12, 1919; he had a good deal of nausea and abdominal pain, vomiting twice. During the afternoon he had three large soft bowel movements, and soon felt well enough to play about the yard. At midnight he awoke with severe abdominal pain, nausea and fever. The following morning he complained of intense abdominal pain, and vomited frequently. His abdomen was soft, except in the region of the spleen, where there was muscle spasm. The spleen, which was four finger breaths below the costal border, was very firm and tender. The pulse was slow and regular, and there was no fever. The urine was dark, but contained no fresh blood.

March 14, forty-eight hours after treatment, the condition of the boy was worse. During the night his urine had been red and scanty. A fresh specimen obtained during the morning was dark and smoky, but not blood-red. The albumin test by the acetic-acid method was strongly positive. The vomiting had stopped, but the abdominal pain had become more intense. The upper left quadrant of the abdomen had become exquisitely tender, and the muscles over this region were rigid. The lower border of the spleen could be determined only with difficulty. It was a full hand's breadth below the costal border, and was very firm.

During the next twenty-four hours the boy's condition grew much worse. He was markedly prostrated, with face drawn and pinched, and was evidently in severe pain. Lying constantly on his right side, with legs drawn up to his abdomen, he breathed rapidly in short, shallow, grunting, painful respirations. The upper left quadrant of the abdomen became so tender that he cried out when the skin over it was even touched. The other quadrants of the abdomen were not tender. The liver was not palpable, nor was there any tenderness over it. Because of the tenderness and rigidity in the upper left quadrant the spleen could not be palpated, and even percussion was unsatisfactory, although it was possible to demonstrate the lower point of splenic dulness, well below the umbilicus. The boys' temperature had risen to 39.2 C., the pulse rate was 120, and the respiration rate was 34. The conjunctivæ showed jaundice in initial stages. The urine was dark, but not bloody. The albumin test was strongly positive. A rupture of the spleen seemed imminent.

The following day—four days after the treatment—a slight improvement had taken place. There was less abdominal pain and less prostration. The temperature had dropped to 37.5 C., and the respiration to 30; the pulse remained at 120. The respirations were still shallow, but less painful. The whole abdomen was tense, with marked rigidity of the entire upper left quadrant. Palpation of the spleen was impossible, but the upper border to percussion was in the sixth interspace in the anterior axillary line, and the lower pole was below the level of the umbilicus. The icterus had increased slightly. The urine, which contained a trace of albumin, was dark and smoky, but its color had cleared considerably during the preceding twenty-four hours.

From this day (the fourth after treatment) the boy showed rapid improvement—the icterus disappeared, the albumin in the urine cleared away, and the spleen decreased in size. A blood film taken on May 16—four days after the betanaphthol treatment—showed a remarkable picture, the chief characteristic of which was the evidence of marked regeneration of red blood cells. Every third or fourth red blood cell was very large and deeply basophilic. There were two or three normoblasts to every microscopic field (oil immersion), and the nuclei of these normoblasts were of every describable shape. The white blood cells had also increased greatly in number, giving a picture, under the low power of the microscope, of a leukemia. A differential white blood cell count showed the proportions: leukocytes, 64 per cent.; transitionals, 24 per cent.; lymphocytes, 11 per cent.; eosinophils, 1 per cent., and nucleated red cells, 17 to every hundred white blood cells. Only one myeloblast appeared, and no myelocytes were seen. No malarial parasites were encountered.

The tenderness and muscle spasm in the upper left abdominal quadrant disappeared at the end of the seventh day. On the tenth day after treatment the boy was well enough to play about the yard, although his spleen was still three finger breadths below the costal border and was slightly tender. He had lost much weight.

This case could not be followed up with a careful clinical study, for the boy lived in a valley which was many miles from the railroad, and which was accessible only by a mule trail. Thus a careful uranalysis, a count of the red and the white blood cells, and a daily differential cell count, although important and desirable, could not be made. Nevertheless, even with those data that were available, the diagnosis was clear-cut—*acute enlargement of the spleen, following erythrocyte destruction,* caused by the administration of 4 gm. of betanaphthol.

The case showed that, although betanaphthol is usually innocuous, nevertheless under certain conditions it may be very toxic, with tremendous destruction of red blood cells. The question at once arose whether blood destruction might not occur in all cases treated with betanaphthol, although perhaps not in so severe a degree as to show objective symptoms. It is a well established fact that malaria renders the blood cells more fragile in some individuals, and it seemed possible that the previous malaria in this instance might have had some bearing on the patient's reaction to betanaphthol. These were points that could not be studied under field conditions, but required hospital supervision and carefully controlled laboratory experiments. I was able to fulfil these requirements, thanks to the kindness of Dr. A. Pedroso, pathologist of the Santa Casa Hospital of São Paulo, and Dr. Pereira Gomes of the ophthalmologic section. The latter allowed me to treat the hookworm patients of his wards.

CASE 2.—In Experiment 3, it will be recalled, the symptoms were negligible in the case of all patients but one. A small, poorly nourished negro, who was in the hospital with a diagnosis of glaucoma, and whose Wassermann reaction was posi-

tive, had had severe malaria two years before, but had suffered no recurrences. The preliminary urine examination was negative, and the blood examination revealed: hemoglobin, 70 per cent.; red cells, 4,900,000; white cells, 5,800; differential count: leukocytes, 70 per cent.; transitionals, 9 per cent.; lymphocytes, 13 per cent.; eosinophils, 8 per cent. The red cells were normal in appearance.

On the second day of treatment, the patient's urine, when freshly passed, was bright red, clear, acid and contained no albumin. It proved negative to a guaiac test, and gave a reduction with Fehling's solution, but not with bismuth. The sediment was negative. The original color of the urinary pigment turned to a much darker shade on standing. The following day (the last day of the treatment) a specimen of freshly passed urine was deep red, with the other characteristics of the previous day unchanged. The same dark red pigment, which did not give a guaiac test, continued to show in the urine for three more days, gradually disappearing, and apparently causing no irritation to the kidneys. One constant characteristic of this pigment—which will be discussed later—was that it turned much darker on standing.

Coincidentally with the urinary changes, a marked difference had occurred in the blood picture. Day by day the red cell count and the hemoglobin index were dropping, until, on May 3—the fourth day after the final dose of betanaphthol—the red cell count had been reduced from 4,900,000 to 2,400,000, and the hemoglobin from 70 per cent. to 51 per cent. The white cell count first increased, then dropped. The differential white cell count showed a marked increase in the transitional cells. Differential white cell count: leukocytes, 64 per cent.; transitionals, 14 per cent.; lymphocytes, 16 per cent.; eosinophils, 6 per cent.

The greatest changes had occurred in the red blood cells. There were large numbers of enormous, irregularly shaped, deeply basophilic red cells, many of them containing large, coarse granules. Nucleated red cells were common—one to every 100 white blood cells. No myeloblasts and no myelocytes were seen. Malarial parasites were not encountered.

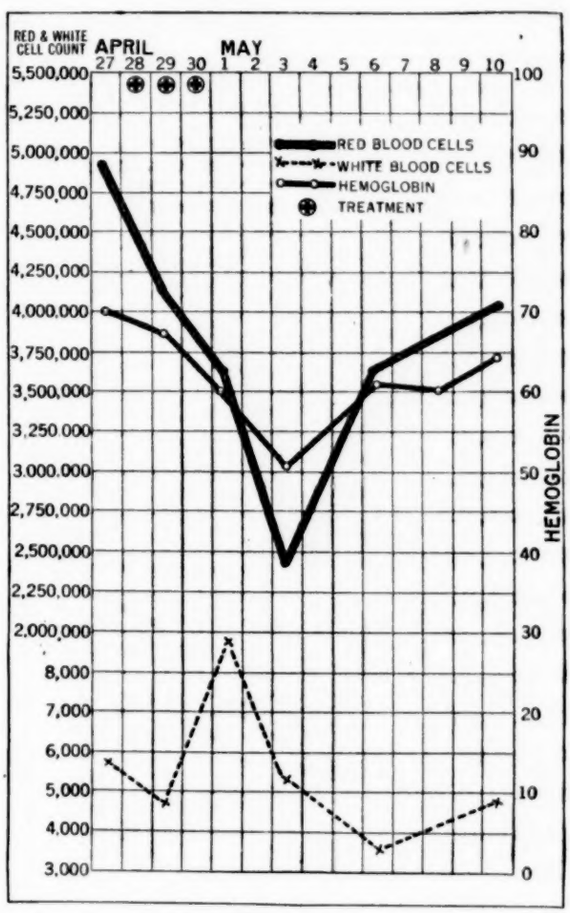

Chart 1.—The blood in Case 2.

Despite this marked destruction of red cells, the patient complained of nothing except thirstiness and a slight weakness. The spleen never became tender, nor was it ever palpable. The blood picture improved rapidly, and had practically resumed its former condition at the end of the fourteenth day, when the patient was discharged from the hospital. Chart 1 illustrates the blood picture as it changed from day to day.

CASE 3.—In Experiment 3, the patient evidenced a blood change corresponding to that in Case 2, although much less severe. The preliminary blood picture showed 67 per cent. hemoglobin, a red cell count of 4,970,000 and a white cell count of 9,900, with transitionals 9 per cent., lymphocytes 17 per cent., and eosinophils 4 per cent. The entire blood picture was: hemoglobin, 67 per cent.; red cells, 4,970,000; white blood cells, 9,900; differential count: leukocytes, 70 per cent.; transitionals, 9 per cent.; lymphocytes, 17 per cent.; eosinophils, 4 per cent. The red cells appeared normal.

May 1, the day following the patient's last dose of betanaphthol, the blood picture was: hemoglobin, 62 per cent.; red blood cells, 3,800,000; white blood cells, 8,000; differential count: leukocytes, 63 per cent.; transitionals, 14 per cent.; lymphocytes, 11 per cent.; eosinophils, 12 per cent.

The red cells occasionally showed very large, irregularly shaped erythrocytes, some of which were stippled, and some deeply basophilic. Three normoblasts were seen. The increase in transitionals—as compared to the condition in the original blood picture—is to be noted. This was a characteristic that was common to all ten cases in Experiment 3.

This day, May 1, proved to be the turning point, for the blood rapidly resumed its normal characteristics, so that eight days after treatment it presented a picture practically identical with the one seen in the preliminary examinations. The urine in this case never contained red pigment, although it turned dark brown on standing. Albumin and guaiac tests in the urine proved negative, but Fehling's solution was reduced during the three days of treatment. The boy had no symptoms whatever during the treatment.

CASE 4.—The one case in Experiment 4 in which symptoms were marked was that of a negro, aged 35, who was in the hospital for a cataract operation. Although he had never fully recovered his strength since a malaria attack six years before, his general condition at the time of examination was good. The urine proved negative, the spleen was not palpable, the red blood cells appeared normal, and no malarial parasites were seen. Chart 2 shows the detailed changes in the red cells, white cells and hemoglobin from the time of first treatment until more than two weeks later.

The patient's condition at the time of preliminary examination was good—urine negative, spleen not palpable, red blood cells normal in appearance, and no parasites to be seen. The hemoglobin was 73 per cent., red blood cells were 4,400,000, white blood cells 10,800, leukocytes 62 per cent., and eosinophils 11 per cent. May 13, the first medication—6 gm. of Mallinckrodt's betanaphthol—was given, and resulted in some nausea and vomiting. May 14, the patient's condition being normal, the dose was repeated. That same day, the man felt very ill—his symptoms including severe headache—and he continued so all through the night.

The following morning, May 15, he was prostrated; the pulse was weak (96), and the temperature was subnormal (36.8 C., or 98.2 F.). Icterus had begun, and the spleen was readily palpable. The urine was thick, black and viscid, and albumin and guaiac reactions were strongly positive. The blood was thick and viscid, and the red blood cells were badly broken. It will be noted, by reference to the chart, that on this day (May 15) the high point (81 per cent.) was reached by the hemoglobin, and that for the next five days the hemoglobin percentage dropped steadily, until it reached the low point (17 per cent.), May 20. May 16, the patient was worse. The urine was dense, purple and sticky, with a

heavy, gray sediment; vomiting was persistent, the icterus had deepened, the spleen was enlarged, and the abdomen in the region of the gallbladder was very tender. The hemoglobin index and the red cell count were falling rapidly.

May 18, the patient's condition grew desperate, the only encouraging feature being practically entire elimination of destroyed red cells from the blood. Hemoglobin was only 22 per cent. and red cells numbered only 1,500,000. A stool, obtained by enema, was a coal-black mass, sticky and viscid. May 19, the low point was reached by the red blood cells; the icterus had deepened slightly; the gallbladder was still tender; and there was a low grade fever of 38 to 38.5 C. (from 100.4 to 101.3 F.). The blood picture was improving rapidly, however, and the urine was quickly clearing.

From May 20—seven days after the first dose of betanaphthol—a slow, gradual improvement began, as evidenced by clearing of the urine, lessening of the icterus, and decrease in the size of the gallbladder, liver and spleen. By May 22, the hemoglobin had increased to 22 per cent., and the red blood cells to 1,600,000, with the differential proportions unchanged. The spleen was not palpable, and the gallbladder was readily felt but still tender.

May 29—two weeks after the betanaphthol was administered—the patient was improving slowly. There was still nausea, but the icterus had gone, and the urine was negative. The gallbladder was still palpable. A blood picture showed the red cells to appear, generally speaking, entirely normal. The most striking feature was the diminution in the proportion of lymphocytes. They had dropped from 15 per cent. (the original picture) to 7 per cent., having declined steadily throughout the period in question.

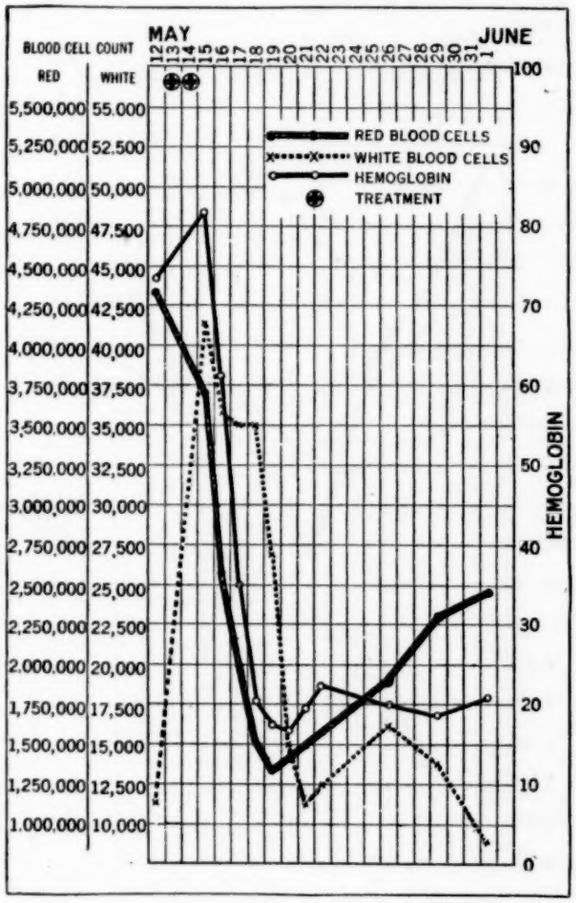

Chart 2.—The blood in Case 4.

CONCLUSIONS

The four experiments prove that betanaphthol in 6-gm. doses, given on three successive days, may produce a severe toxic effect similar to that caused by benzol (benzene, C_6H_6), in that it specifically attacks the red blood cells. In the four cases of betanaphthol poisoning reported, while the symptomatology varied greatly, the essential pathology common to all cases was simply a destruction of red blood cells with, perhaps, in the severe cases a destruction of the blood-forming cells in the bone marrow. It is hard to explain how the betanaphthol destroys the red blood cells, and why seventy-five of the cases which I treated showed no symptoms, while four became victims of the drug's toxic action. Comparison of the cases and of their history previous to the betanaphthol treatment would certainly seem to indicate, first, that the intoxication shown by the poisoned cases was not due to their greater intestinal absorption of the drug; second, that the size of the dose was not proportionate to the degree of intoxication, and third, that the degree of previous anemia in the patient apparently had nothing to do with the toxic effect of the drug. The experiments also showed that the drug had little or no effect on normal kidneys. In certain cases, to be sure, there was much albumin in the urine, with many casts; but this condition was due to the elimination of the waste products from the blood.

Finally, the following definite conclusions concerning the toxic action of betanaphthol were arrived at as a result of the experiments that have been described:

1. Large doses of betanaphthol (18 gm. for adults) used in the treatment of seventy-nine cases of hookworm disease produced very severe toxic symptoms in two cases, and also produced marked changes in the blood cells of two other cases.

2. The toxic action of betanaphthol in these four cases was a destruction of the red blood cells. The drug selected the red blood cells and destroyed them in great numbers, with resultant severe anemia, icterus, enlargement of the spleen and liver, enlargement of the gallbladder and hemoglobinuria. The white blood cells apparently were not destroyed by the drug. The liver, spleen, kidneys and other organs of the body were not affected primarily, but were markedly affected secondarily, because of the anemia, and because of the injurious effects produced by the elimination of large numbers of destroyed red blood cells.

3. The type of cases that are most susceptible to the toxic action of betanaphthol poisoning has not been determined. In all three of the severe cases of poisoning there was a history of recent malaria. It is probable that those cases in which the red blood cells are rendered more fragile by recent malaria are more susceptible to betanaphthol poisoning.

4. Betanaphthol, in 18-gm. doses, is so toxic that it cannot be recommended for general use in the treatment of hookworm disease.[3]

3. In addition to the references already given, these will be found of interest: Salkowski: Ztschr. f. physiol. Chem. **15**, 1891. Bunting: Johns Hopkins Med. Bull. **16**: 222, 1905.

Good Government.—The first essential in good health government is a general and a clear understanding of what should constitute the more important duties in health administration of our three primary divisions of government, to wit, federal, state and county, and how these three divisions should cooperate or be related in the improvement of the public health.—W. S. Rankin, *Tr. Assn. Life Ins. Presidents*, 1919.

A CARDIOVASCULAR RATING AS A MEASURE OF PHYSICAL FATIGUE AND EFFICIENCY *

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The need of a measure for physical efficiency whereby degrees of fatigue, physical fitness and health may be determined has been felt alike by the medical profession and instructors in physical education and school hygiene. Of late, the newly awakened interest in industrial efficiency has shown that we lack satisfactory and reliable tests of fatigue. Experience with the aviator during the war also emphasized the need of some easily applied reliable physical efficiency test. Some aviators gradually underwent physical and nervous deterioration, the result of the wear and tear of the air work, or sometimes of dissipation, which made them less reliable in handling the aeroplane and frequently ultimately led to a crash. These aviators at times developed a disinclination to fly, but would not confess it because of the fear of being considered "yellow." To single out such men, the flight surgeon required the aid of a dependable test.

Unquestionably, the most satisfactory test for fatigue and loss in physical fitness would be one that eliminates the "personal equation" of the examiner and the anxiety and dishonesty of the patient. Replies to questions concerning symptoms and habits are often misleading because of a preformed opinion by the examiner or because the patient is incapable of self-analysis and accurate description of his experiences. Furthermore, for personal reasons some men would prefer to mislead the examiner, and the test should not, therefore, demand much cooperation and attention from the patient.

The functional changes of the body brought about by regular physical training give the basis for a number of physical efficiency tests. The attention of trainers and athletes, as well as of physiologists, has naturally been directed to these. A brief review of the conclusions regarding the physiologic changes which occur as a result of improved physical condition will suggest possible tests for degrees of health and fitness.

Certain differences between active and inactive animals throw light on these functional variations. The wild hare, which lives an active life in the open, and the wild rabbit, which lives an inactive life in seclusion and does not venture far from its burrow, have been compared by Dreyer [1] of Oxford University. He found that a wild hare has double the blood volume, 30 per cent. more hemoglobin and three times more heart muscle than a wild rabbit of the same weight. The rate of heart beat of the wild hare is about 68, and of the wild rabbit about 200 per minute. The respiration rate of the hare is between 18 and 20, and of the rabbit about 50 per minute. Furthermore, the meat of the hare is dark, and that of the rabbit light in color. No doubt, similar differences exist between an athlete and a sedentary worker, and there is reason to believe that these functional differences vary to some extent as the health and fitness of the individual person vary.

The cardiovascular changes during altered physical fitness have been studied most, and it is these that are considered in this paper. The tests here discussed should not be confused with functional heart tests. We are concerned with the cardiovascular changes only so far as they give evidence of fatigue and health changes in the body.

THE PULSE RATE AS A CRITERION OF HEALTH

(*a*) *The Postural Rates.*—Cook and Pembrey,[2] while finding considerable variation in the pulse rate of different healthy individuals, showed, however, more frequently a slow rate in men trained for muscular work. From his extensive experience, Meylan [3] concluded that a horizontal posture pulse rate between 40 and 80 and a vertical posture rate between 50 and 90 were favorable health signs. McCurdy,[4] from a study of boys passing through the adolescent changes, decided that the heart rate serves as a fair indication of condition; a high heart rate indicates poor condition, and a heart rate with wide variations between the horizontal and standing positions suggests a poor vascular adjustment.

During repeated periods of training of a single subject, Dawson [5] found that training slowed the resting pulse rate as much as 9 beats per minute and that this especially influenced the noon and afternoon pulse. Thus the form of the diurnal curve was slightly altered. He also found that acute infection caused an increase in the pulse rate, but this was much less pronounced in the trained than in the untrained man. In young men, the normal average pulse rate has been reported to be 78.9 standing, 70.1 sitting and 66.6 lying. The continued practice of some form of exercise, such as rowing, extending over a period of years may progressively lower the rate of heart beat. Thus Michell [6] found the average rate of the athlete's pulse during the first year of training was 69, in the second year, 64.5 and in the third year, 56.8. According to Lindhard,[7] not only is the pulse less frequent, but the output of the heart per minute is slightly larger in the trained than in the untrained man.

All available evidence indicates that with improvement in physical fitness the heart beats less frequently and more efficiently. It follows, therefore, that the pulse rates in the reclining and standing postures may at times give useful hints as to the degree of fitness and health. That the altered physical condition may not be evidenced by pulse rate changes in both of these postural positions was demonstrated by Boney,[8] who found in some tired, listless, depressed and fatigued patients that the pulse rate was normal while lying down but was abnormally rapid on standing; in several the standing rate was as high as 130 or 140 beats per minute.

(*b*) *Pulse Rate Increase on Standing.*—The difference between the pulse rates in the standing and reclining postures has been found to be a useful index of physical fitness. According to Vierordt,[9] the average postural increase is from 12 to 14 beats. Crampton [10] reported that in vigorous subjects the heart rate may not increase on standing, while in wearied subjects it may increase as much as 44 beats per minute. Meylan [3] believes a standing increase of not more than

* From the Medical Research Laboratory, Air Service, Mitchel Field, Long Island, N. Y.

1. Dreyer, cited by Flack, M., and Hill, L.: Text-Book of Physiology, New York, Longmans, Green & Co., 1919, p. 79.
2. Cook and Pembrey: J. Physiol. **45**: 438, 1913.
3. Meylan: Am. Phys. Educ. Rev. **18**: 441, 1913.
4. McCurdy: Am. Phys. Educ. Rev. **15**: 421, 1910.
5. Dawson: Am. J. Physiol. **50**: 443 (Dec.) 1919.
6. Michell, cited by Flack, M., and Hill, L.: Text-Book of Physiology, New York, Longmans, Green & Co., 1919, p. 216.
7. Lindhard: Arch. f. d. ges. Physiol (Pflüger's) **161**: 233, 1915.
8. Boney: Brit. M. J. **2**: 645, 1916.
9. Vierordt: Anatomische, physiologische und physikalische Daten und Tabellen, Jena, G. Fischer, 1906, p. 235.
10. Crampton: Proc. Soc. Exper. Biol. & Med. **12**: 119, 1915.

16 beats is a favorable sign of physical efficiency. Parkinson [11] recently reported that in twenty healthy soldiers an average increase of 10 beats was noted when the recumbent and standing rates were compared. Geigel [12] considers that a variation of more than 30 between lying and standing pulse rates indicates weakened heart function. It is now recognized that in states of debility the postural difference may be as much as from 30 to 50 per minute. A slow horizontal and a slow vertical postural pulse rate with a small difference between the two are usually signs of excellent health.

(*c*) *Exercise Pulse Rate.*—According to Bowen,[13] the rapidity of the pulse during exercise is chiefly determined by (1) the speed of movement; (2) the resistance encountered; (3) the condition of the individual, and (4) age. He [14] also pointed out that pulse rate counts made after exercise are worthless for comparison, unless the count is made at exactly the same period in each case, and the subject is placed in exactly the same position and assumes the same degree of relaxation and repose.

The increase in the pulse rate after a certain amount of work is greater in an untrained than in a trained person. Hartwell and Tweedy,[15] comparing athletic and nonathletic women, found that running up and down stairs accelerated the heart rate an average of 10 beats more in the nonathletic women. Cotton, Rapport and Lewis [16] believe that the average height to which the pulse rate is raised at the cessation of effort may be taken as a gage of the degree of distress produced, and that the amount of distress is determined by the degree of health. Similar conclusions have been reached by many students of the effects of exercise on acceleration of the pulse rate.

(*d*) *The Decline in Pulse Rate After Exertion.*—A widely recognized sign of physical condition is the time required by the pulse rate to return to normal after effort. Flack and Bowdler,[17] from a study of the reactions following stepping on a chair five times in fifteen seconds, conclude that the heart rate in the healthy subject should not increase more than 25 beats and should return to normal within thirty seconds. Meakins and Gunson [18] report that after a climb of twenty-seven steps at a brisk walk, the pulse rate returned to normal within one minute in healthy subjects, while in patients it required as much as five minutes.

It should be emphasized that while the several pulse rate criteria of fitness may all be found in a single person, not one or even any two of them is found to be an absolute test. In forming a judgment as to the physical condition of a man it is best to consider together the postural rates, the increase on standing and after exercise, and the time required for the rate to return to normal after exercise.

THE ARTERIAL BLOOD PRESSURE AS A CRITERION OF CONDITION

(*a*) *The Normal Arterial Pressures.*—Although the arterial pressures have received much attention, the determination of the pressures of a person at rest offers little of value in estimating the physical condition of the young man. Meylan [3] considers systolic pressures for the horizontal posture between 110 and 140, and for the vertical position between 110 and 150 mm. of mercury as favorable signs. Dearborn [19] believes that adequate physical training raises the blood pressure. He obtained an average of 114 in trained and 108 in untrained women. Dawson [5] has recently shown that the effect of training on the resting blood pressure is neither striking nor constant. Bainbridge [20] has written that "the systolic arterial pressure, according to most observers, is not higher during rest in trained than in untrained men."

Opinion as to the value of the diastolic and pulse pressures is not as clearly crystallized as it is regarding the systolic pressure. Hypotension in systolic or diastolic pressure occurs in weak patients.

(*b*) *The Postural Changes in Arterial Pressures.*—The hydrostatic effects of posture and the manner in which the splanchnic vasomotor mechanism compensates for these are well known. Normally, when man changes from the reclining to the standing position, the splanchnic vasomotor tone overcompensates the hydrostatic effects of gravity. In normal subjects the systolic blood pressure is about 10 mm. higher in the standing than in the recumbent posture. Erlanger and Hooker [21] found that on standing there might be either a slight rise or fall in the brachial systolic pressure. According to Hill,[22] any influence which weakens the splanchnic vasomotor mechanism interferes with the compensation. Sewall [23] has shown that individuals in whom there is excessive gravitation of the blood to the limbs and splanchnic area on standing are victims of physical weakness and nervous instability and often suffer from headache, dizziness or tinnitus in the erect posture. That the systolic pressure falls in persons weakened by dissipation, overwork, lack of sleep, or disease was recognized by Crampton in his "blood ptosis test" for physical fitness. Crampton [10] demonstrated that a subject might, when standing, show weakness by a decrease in the systolic pressure or by a large increase in the heart rate. Recently, Sewall [23] has pointed out that a weakened patient on standing may fail to show the systolic drop, but instead may have an inordinate rise in diastolic pressure. He employs this rise in diastolic pressure and low levels of pulse pressure as measures of fitness.

MEANS OF MEASURING PHYSICAL EFFICIENCY

The foregoing observations on the cardiovascular changes that occur with training and with weakness suggest means of measuring fatigue, staleness and weakness. A pulse rate more rapid than the average in the reclining and standing postures, a large acceleration on standing and after exertion, a slow return to normal after exercise, and a systolic pressure that fails to rise but falls when the subject stands, indicate fatigue or weakness.

In 1913 and 1914, three physical efficiency tests were reported that used some or all of these changes. Crampton's [10] "blood ptosis test" is a vasomotor efficiency test that is intended to show the beneficial or depressive effect of various conditions supposed to affect the health. It takes account of the differences between the pulse rates and the systolic pressures in

11. Parkinson: Heart **6**: 317, 1917.
12. Geigel: Deutsch. Arch. f. klin. Med. **99**: 1028, 1906.
13. Bowen: Am. Phys. Educ. Rev. **8**: 8, 1903.
14. Bowen: Am. Phys. Educ. Rev. **8**: 232, 1903.
15. Hartwell and Tweedy: J. Physiol. **46**: 9, 1913.
16. Cotton, Rapport and Lewis: Heart **6**: 269, 1917.
17. Flack and Bowdler: Reports of the Air Medical Investigations Committee, London, No. 2, 1918, p. 12.
18. Meakins and Gunson: Special Report of the Medical Research Committee, London, No. 8, 1918, p. 27; Heart **6**: 284, 1917.
19. Dearborn: Am. Phys. Educ. Rev. **20**: 337, 414, 1915.
20. Bainbridge: Physiology of Muscular Exercise, New York, Longmans, Green & Co., 1919, p. 142.
21. Erlanger and Hooker: Johns Hopkins Hosp. Rep. **12**: 145, 1904.
22. Hill: J. Physiol. **18**: 15, 1895.
23. Sewall: Am. J. M. Sc. **158**: 786, 1919.

the horizontal and vertical postures. The usual range of systolic pressure variation is from + 10 to — 10, and the heart rate increase from 0 to 44. It was determined that a decrease of 1 mm. in systolic pressure was equivalent to an increase in heart rate of approximately 2 beats. By statistically balancing the ranges of systolic pressure and pulse rate and assigning equal percentages to equal ranges, a percentage scale of fitness was established.

Meylan,[3] although not attempting to evaluate, finds that efficiency may be judged by (1) general condition as shown in weight, color of skin and general appearances such as firm, vigorous muscles; (2) pulse rate in the horizontal and vertical positions; (3) systolic blood pressure in the horizontal and vertical positions, and (4) heart reaction after the exercise of hopping 100 feet. Favorable signs were considered to be a horizontal pulse rate between 40 and 80, a vertical rate between 50 and 90, and a standing increase of not more than 16; a horizontal blood pressure between 100 and 140, and a vertical pressure between 110 and 150, with a difference of 10 or more; an exercise increase in pulse rate of less than 100 per cent. and a recovery of more than 80 per cent. in a minute.

Foster's [24] efficiency test made use of the standing pulse rate, the rate immediately after running in a fixed place for exactly fifteen seconds at the rate of 180 steps per minute, and the rate forty-five seconds after the work ceased.

Crampton's test was employed with the aviators at Hazelhurst Field, but was found to be unsatisfactory because of the fact that physical deterioration may be manifest in various ways in the cardiovascular mechanism. The test neglects four of the available factors. A similar criticism may be made of Foster's method. A statistical study of several hundred cases led to the abandonment of both of these methods.

POINT SYSTEM FOR GRADING CARDIOVASCULAR REACTIONS

When it becomes necessary to weigh data from six sets of observations, it is difficult to evaluate them properly and to avoid giving undue weight to a single factor. If it is true, as it seems to be, that weakness may show itself differently in individual cases, then a centering of the attention only on the postural systolic blood pressure changes or on the amount of acceleration of the pulse rate in exercise would result in the overlooking of some cases of weakness. In order to avoid the disposition to stress one or two of the factors that give evidence of physical deterioration, and to recognize equally all six factors, we have used a system of scoring the tests wherein each of the cardiovascular changes is rated according to a scale that evaluates the condition or change. The grading of performance must of necessity be arbitrary and, therefore, is held by some to be objectionable. Nevertheless, as was stated earlier, the "personal equation" of the observer often weighs too heavily where comparisons are made. A mathematical system of grading can in large measure eliminate the personal factor.

The scoring scheme we have used recognizes that fatigue or derangement may be evidenced in the high heart rate during reclining, during standing; in the number of beats the heart rate increases when the standing and reclining postures are compared; in the acceleration in the pulse rate after exercise; in the time taken by the pulse to return to normal, and, lastly, in the rise or fall in the systolic blood pressure on standing. This scheme uses in part a plan proposed by Dr. J. H. McCurdy for rating infantry men in cardiovascular and neuromuscular efficiency. The scores for each of the six items range from + 3 to — 3. A perfect score, the sum of the value given to each of the six items, is 18. The values as assigned appear in Table 1, Parts A, B, C, D, E and F. In using the table for scoring, Parts A and B, also C and D, must always be used together. Thus, if an individual has a pulse rate increase of 15 beats (see Part B) on standing and his reclining rate was 60 (see Part A), he is graded 3 on his standing increase. However, if his reclining rate had been 100, then a standing increase of 15 would have been scored 0.

PROCEDURE IN MAKING OBSERVATIONS

1. The patient reclines for five minutes. (a) The heart rate is then counted for twenty seconds. When two consecutive twenty second counts are the same,

TABLE 1.—POINTS FOR GRADING CARDIOVASCULAR CHANGES

A. Reclining Pulse Rate		B. Pulse Rate Increase on Standing				
Rate	Points	0-10 Beats, Points	11-18 Beats, Points	19-26 Beats, Points	27-34 Beats, Points	35-42 Beats, Points
50- 60	3	3	3	2	1	0
61- 70	3	3	2	1	0	—1
71- 80	2	3	2	0	—1	—2
81- 90	1	2	1	—1	—2	—3
91-100	0	1	0	—2	—3	—3
101-110	—1	0	—1	—3	—3	—3

C. Standing Pulse Rate		D. Pulse Rate Increase Immediately after Exercise				
Rate	Points	0-10 Beats, Points	11-20 Beats, Points	21-30 Beats, Points	31-40 Beats, Points	41-50 Beats, Points
60- 70	3	3	3	2	1	0
71- 80	3	3	2	1	0	0
81- 90	2	3	2	1	0	—1
91-100	1	2	1	0	—1	—2
101-110	1	1	0	—1	—2	—3
111-120	0	1	—1	—2	—3	—3
121-130	0	0	—2	—3	—3	—3
131-140	—1	0	—3	—3	—3	—3

E. Return of Pulse Rate to Standing Normal after Exercise		F. Systolic Pressure, Standing, Compared with Reclining	
Seconds	Points	Change in Mm.	Points
0- 60	3	Rise of 8 or more	3
61- 90	2	Rise of 2-7	2
91-120	1	No rise	1
After 120: 2- 10 beats above normal	0	Fall of 2-5	0
After 120: 11- 30 beats above normal	—1	Fall of 6 or more	—1

this is multiplied by 3 and recorded. The score is noted according to Part A, Table 1. (*b*) The systolic blood pressure is next taken by auscultation; two or three readings are made as a check.

2. (*a*) The patient stands at ease for one or two minutes to allow the pulse to assume a uniform rate. When two consecutive twenty second counts are the same, this is multiplied by 3 and recorded. The score is obtained by use of Part C, Table 1. The difference between the standing and reclining pulse rates is scored then by use of Part B, Table 1. (*b*) The standing systolic pressure is next taken. The difference between this and the reclining systolic pressure is then scored by Part F, Table 1.

3. The patient next steps on a chair about 18 inches high, five times in fifteen seconds timed by a watch. To make this test uniform, he stands with one foot on the chair at the count one; this foot remains on the chair and is not brought to the floor again until after the count five. At each count he brings the other foot on the chair and at the count "down" replaces it on

24. Foster: Am. Phys. Educ. Rev. **19**: 632, 1914.

the floor. This should be timed accurately, so that at the fifteen second mark both feet are on the floor. (*a*) Immediately, while he stands at ease, the pulse rate is counted for fifteen seconds; this is multiplied by 4 and recorded. (*b*) Counting is continued in fifteen second intervals for two minutes, record being made of the counts at 60, 90 and 120 seconds.

The data from *a* will be scored by Part D, Table 1, taking the difference between this exercise pulse rate and the standing rate. The data in *b* are scored according to Part E, Table 1.

This system of scoring men as to physical fitness is now being used by flight surgeons in their work among aviators, and is applied at the Medical Research Laboratory at Mitchel Aviation Field on Long Island.

That there may be value in assembling the circulatory data under such a point system is indicated from an analysis of fifty-four cases of aviators who, when examined by the medical officers of the departments of the laboratory, were found to be ailing and physically below standard. The medical examinations included an overhaul by the internist, neurologist, ophthalmologist, and ear, nose and throat expert. The medical findings include a large variety of conditions, the majority being common to any group of men and in no way characteristic of aviators.

That which was of greatest interest in this analysis was the final efficiency score of each patient. The distribution of the cases is shown in Table 2.

TABLE 2.—EFFICIENCY SCORE IN FIFTY-FOUR CASES

Points	No. of Cases	Per Cent.
0 or less	2	3.7
From 1 to 3	9	16.6
4 to 6	15	27.8
7 to 9	22	40.7
10 to 12	3	5.6
13 to 15	3	5.6
16 to 18	0	0.0
Total	54	100.0

Only six of the fifty-four cases had a score of 10 or better, while 88.8 per cent. had scores ranging between 9 and —1. These figures seem to indicate that a score of 9 or less is characteristic of physically unfit men.

On the assumption that a score of 9 or less gives indication that the clinician may find something wrong with the patient, we have listed all men among a group of 150 men who had a low score. In this group there were forty-six who scored 9 or less.

The medical examiners working independently, and without the cardiovascular data available to them, recorded abnormal conditions in thirty of the forty-six men. Thus, when working independently, 65.2 per cent. of the group of forty-six with low scores by the cardiovascular efficiency test were found by others to be below standard. Two of the men were unfit because of excessive smoking, and one had recently been on a drunken spree. The neurologist reported five as stale and nervously unbalanced, the internist alone found five unfit, six were tonsil or local infection cases, and the remainder were found wrong by at least two of the medical departments.

This point system of scoring men as to health and physical fitness by the cardiovascular reactions is easily applied. It has the advantage of stimulating men to attempt to improve the score by exercise and proper living. It is suggested that a score of 9 or less gives reason for an overhaul of the patient by a clinician. Aviators with a low score might well be called back for further examination and observation. A poor score suggests a search for a cause. The cause may be disease or unhygienic living.

THE DIAGNOSIS AND PROGNOSIS OF LOSS OF VISION FROM ACCESSORY SINUS DISEASE*

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Having for the past three years made a study of blindness originating in the accessory sinuses, I wish to present some of the results, which may be of interest to the profession and possibly of some benefit to humanity. The question has been asked many times what findings warrant operative interference: in other words, how to arrive at a correct diagnosis. This paper is devoted to this phase of the subject, although some space is given to the prognosis.

There are various types of accessory sinus blindness, some of which will recover spontaneously, while others will result in permanent loss of vision unless prompt and proper attention is given. Etiologically they are generally divided as: (1) those due to a direct spreading of the infection to the sheath of the optic nerve; (2) those due to the toxemia from infection in the sinuses, and (3) those due to hyperplasia.

It is usually easy to diagnose the first two types either from inspection or from the roentgenograms, although pus not possible to detect previously is occasionally found on operating. As the nasal and roentgen-ray examinations are frequently negative in the third, the hyperplastic, type, when the middle turbinate is not involved, the diagnosis is much more difficult. The same line of reasoning, however, is equally applicable to all when a definite diagnosis cannot be made.

Hyperplasia has been defined as a rarefying osteitis associated with inflammatory swelling and fibrous thickening of the mucous membrane lining the accessory sinuses. Its pathology has always seemed to me rather obscure. Many specimens have been sent to the laboratory, but nothing of interest has been discovered. Dr. Verhoeff, the pathologist, says that they are more or less traumatized in removal, and when they are decalcified whatever changes may have occurred seem to be destroyed. In one of the last cases, for example, the posterior ethmoid was filled with a thick, gelatinous looking membrane, which I was able to remove entire. It was carefully handled and sent to the laboratory apparently in good condition, and I had high hopes of getting some valuable information; but the report, as usual, was negative. Dr. Sluder sent many of his specimens to Dr. Jonathan Wright, who was able to build up from these and some of his own a fairly consistent explanation of the process taking place in hyperplasia; but even he, at the end of his discussion, said:

> It would probably be difficult to find an adult individual in a temperate or cold climate who does not present an example of this bone change within his nasal chambers which I have a right to call pathological. It is only exceptionally that the symptoms to which it gives rise are sufficient to cause him to seek relief.

* Read before the Section on Laryngology, Otology and Rhinology at the Seventy-First Annual Session of the American Medical Association, New Orleans, April, 1920.

From the foregoing it is readily seen that many of these cases have a condition so elusive as to be difficult of detection either microscopically or macroscopically. In looking into these noses one is disappointed in not finding much, if anything, pathologic. A most careful inspection of the size and position of the middle turbinate should be made, as it will frequently be found to be normal anteriorly but to widen posteriorly. The position of the nasal septum is also of importance in its posterior aspect, as the middle turbinate is frequently wedged between it and the ethmoidal wall. In many of these cases there will be found some slight obstruction to the drainage from the posterior sinuses. The changes are, however, difficult to detect, and negative reports have been given by very good rhinologists even when a markedly pathologic condition was found on operating. It is always a disappointment to the ophthalmologist when pus cannot be found and the roentgenograms are negative. It is difficult to convince some that there is such a thing as hyperplasia; but case after case has demonstrated that pressure sufficient to cause atrophy of the nerve can take place in a nose that on both inspection and roentgen-ray examinations showed practically nothing abnormal.

Toxemia is frequently the cause of blindness, and its origin should be carefully investigated before advising the opening of the sinuses. Teeth, tonsils, accessory sinuses, intestinal autointoxication, alcohol, tobacco, syphilis, etc., must all be considered. An interesting illustration of the necessity of this occurred in the clinic at the infirmary, when I was hurriedly called to examine a nose in a case of recent loss of vision. In questioning the patient it was learned that one of his friends in the furniture business had given him some alcohol with which to rub his chest. The alcohol was found to be of the wood variety, and the vision returned after its discontinuance.

The possibility of the loss of vision being due to pituitary disease must likewise be considered, and careful study made of the plates of that region. I have seen at least a dozen of these cases. Two were malignant. In a third there had been a complete bilateral ethmoid and sphenoid exenteration, which could have been avoided had the plates been inspected. It has been my practice to have each case thoroughly investigated; that is, to have a medical, neurologic, dental, Wassermann and roentgen-ray examination in addition to the ophthalmologic. If these findings are negative and the condition of the eye is unimproved or becoming progressively worse, I advise the immediate removal of the middle turbinate and the opening of the posterior accessory sinuses.

While it is a source of satisfaction to operate on patients with a marked nasal pathologic condition, nevertheless one should realize that unless some definite explanation for the loss of vision can be found elsewhere, its most probable origin is in the sinuses. The diagnosis of accessory sinus disease in cases of practically negative nasal findings is largely made by exclusion.

THE PROGNOSIS

It is well known that cases of blindness from accessory sinus disease recover spontaneously. Four of my patients have told of previous attacks in which the eye was blurry for two or three days and the vision defective, but from which they recovered without treatment. One of them had a second attack a year later and delayed so long before seeking advice, expecting the eye to recover as before, that optic atrophy resulted. Thus it is unfortunate in a sense that these cases tend to recover spontaneously, as permanent injury may result while waiting. This is especially true when there is complete loss of vision.

There are two factors that enter largely into the prognosis: (1) the question of time before the patient seeks relief, and (2) the question of the degree of blindness. As to the question of time, I have endeavored to determine from the cases studied how long an interval could elapse beyond which there would be danger of permanent impairment of vision—in other words, how long one can treat or watch a case before advising operative interference.

The chronological summary shows this.

In the twenty-five cases tabulated, two patients recovered under local treatment, one of four days' duration with vision 20/40, and the other of four months' duration with vision 20/70 (Cases 3 and 20).

Five operations were performed within the first week and normal vision was obtained in all (Cases 2, 9, 9a, 9b and 17).

Of the five patients operated on within two weeks, two recovered with normal vision, two with vision 20/20—but slight pallor of the nerve, and one with a vision of fingers at 6 inches and optic atrophy (Cases 5, 7, 18, 24 and 25).

In the four cases in which the patients were operated on between the second and fourth weeks, normal vision, but with some pallor of the disk, was obtained in one. The others, however, were all improved (Cases 14, 15, 18 and 19).

Four patients were operated on between the first and second months. One recovered with normal vision, another with 20/20—and some pallor of the disk. In the other two there was optic atrophy with no improvement in one and but slight improvement in the other (Cases 4, 6, 8 and 22).

Of the five cases of over two months' duration there was no improvement in two. In the other three the improvement was so slight it was almost negligible (Cases 10, 12, 13, 16 and 21).

From the foregoing summary one can say with some degree of assurance that unless a case shows improvement under treatment before the end of a week, there is danger of permanent loss of vision unless the pressure on the nerve can be relieved. In Case 24 this actually occurred in eleven days, this patient refusing to have anything done until the social service took hold.

In cases of more than two months' duration, little can be expected. It is probable that the progress of the disease can be checked if it is due to some infection in the sinuses.

As to the degree of the loss of vision: In the six cases in which there was complete blindness, two patients, with blindness of eight and ten days' duration, recovered nearly all their vision, but there remained pallor of the nerve. In one case of four weeks' standing, good vision was obtained, but there was some pallor. Two were unimproved, while the third was able only to count fingers at 3 feet (Cases 6, 10, 14, 22, 23 and 24).

Thus, the demand for early operative inference in the cases of total loss of vision is much more imperative than when the loss is but partial. It would seem the wiser course to err here on the side of advising operation too soon, and possibly unnecessarily, than to

risk a patient becoming permanently blind through delay.

The last three cases have not been previously reported, so it may be of interest to give these somewhat in detail:

REPORT OF CASES

CASE 23.—N. S., a man, aged 30, referred by Dr. Alexander Quackenboss at the infirmary, Jan. 9, 1920, with a diagnosis of retrobulbar neuritis, right, of seven days' duration, had noticed a slight pain and blurring of the right eye, two weeks previously, following a severe cold. The haziness increased so that at one time he could not even perceive light. On admission he was able to distinguish finger movements in the temporal field at 1 foot. The edges of the right disk were slightly indistinct and the smaller blood vessels rather prominent. The septum was deflected; and while the anterior end of the right middle turbinate was small, the posterior portion was large and obstructive. Roentgenograms and neurologic, physical, dental and Wassermann tests were all

SUMMARY OF INDIVIDUAL FINDINGS

Case	Referred by	Eye	Diagnosis	Duration	Nasal Findings	Roentgen-Ray Report	Vision before Operation	Operation	Vision after Operation	Pathologic Findings	Comment
1.	Dr. H. B. Chandler....	Left	Chronic retrobulbar neuritis	1 year	Pus about sphenoid	Ethmoids obscured	Light perception	None	Unimproved	Pus	
2.	Dr. W. J. Daly.....	Both	Acute retrobulbar neuritis	7 days	Negative	Asymmetry of sphenoid	2/20	Left mid. turb. and sphenoid	Normal	Hyperplasia	
3.	Dr. F. I. Proctor.....	Both	Acute retrobulbar neuritis	3 days	Hypertrophied middle turbinates	Sphenoids hazy	Rt. 20/30 Left 20/40	Local treatment	Normal	Hyperplasia	Removed left middle turb. after vision was normal
4.	Dr. F. H. Verhoeff..... (M. C. E. & E. I.*)	Both	Retrobulbar neuritis with some optic atrophy	6 wks.	Negative	Left sphenoid obscured	Rt. 2/200 Left shadows	Both mid. turbs., post. ethmoids and sphenoids	Rt. fingers 2 ft., Left fingers 3 ft.	Pus and gran. in sphenoid	Optic atrophy
5.	Dr. R. C. Mackenzie.... (M. C. E. & E. I.)	Both	Acute optic neuritis	2 wks.	Negative	Negative	Rt. fingers 1 ft., Left 20/200	Right mid. turb. and sphenoid	Normal	Hyperplasia	Slight pallor of disk
6.	Dr. P. H. Thompson... (M. C. E. & E. I.)	Left	Acute retrobulbar neuritis	6 wks.	Def. septum	Negative	Light perception	Sept., mid. turb. and sphenoid	20/20—	Hyperplasia	Slight pallor of disk
7.	Dr. Alex. Quackenboss (M. C. E. & E. I.)	Both	Optic neuritis	10 days	Hypertrophied middle turbinates	Negative	Rt. nil, Lt. fingers	Both mid. turbs. and sphenoid	Normal	Hyperplasia	Slight pallor of disk
8.	Dr. F. M. Spalding..... (M. C. E. & E. I.)	Both	Optic neuritis	6 wks.	Negative	Negative	Rt. light percep., Lt. fingers 3 ft.	Septum, rt. mid. turb. and sphenoid	Normal	Carious molar; dis. antrum	
9.	Dr. F. H. Verhoeff..... (M. C. E. & E. I.)	Left	Papillitis	6 days	Negative	Negative	20/200	Left mid. turb., post. ethmoids and sphenoid	Normal	Pus and gran.; carious tooth	Exophthalmos
9a.	Dr. F. H. Verhoeff..... (M. C. E. & E. I.)	Right	Papillitis	4 days	Negative	Negative	20/200	Rt. mid. turb. and sphenoid	Normal	Pus and gran.	
9b.	Dr. F. H. Verhoeff..... (M. C. E. & E. I.)	Left	Papillitis	1 wk.	Negative	Negative	20/30	Left antrum	Normal	Pus	
10.	Dr. F. H. Verhoeff..... (M. C. E. & E. I.)	Right	Neuroretinitis and choroiditis	3 mos.	Negative	Negative	Nil	Rt. mid. turb., ethmoid and sphenoid	No improvement	Pus and gran.	Headaches relieved
11.	Dr. W. J. Daly.....	Left	Axial neuritis	8 mos.	Polypoid tissue	Erosion in sella turcica, etc.	20/200	None	.....	Round cell sarcoma	Death from streptococcus meningitis
12.	Dr. F. E. Cheney.....	Left	Chronic optic neuritis	4 mos.	Def. septum; pus	Ethmoids and sphenoids hazy	14/20	Left mid. turb., post. ethmoids and sphenoid	16/20	Pus in sphenoid	
13.	Dr. P. H. Thompson... (M. C. E. & E. I.)	Both	Chronic optic neuritis	4 mos.	Def. septum; hyper. mid. turbs.	Negative	20/200	Both mid. turbs., post. ethmoids and sphenoids	20/100	Pus	
14.	Dr. F. M. Spalding..... (M. C. E. & E. I.)	Both	Neuroretinitis	4 wks.	Def. septum; hyper. mid. turbs.	Negative	Nil	Both mid. turbs. and post. ethmoids	Fingers 20 ft.	Pus	Child of 5 years
15.	Dr. Alex. Quackenboss (M. C. E. & E. I.)	Left	Papillitis	1 mo.	Hyper. left mid. turb. and pus	Ethmoids obscured	Lt. fingers 1 ft., Rt. 20/40	Left mid. turb., post. ethmoids and sphenoid	Lt. fingers 2 ft., Rt. 20/20	Pus in sphenoid under pressure	Question of malingering
16.	Dr. E. T. Easton.....	Right	Retrobulbar neuritis with some optic atrophy	2 yrs.	Def. septum; hyper. mid. turb.	Negative	20/200	Rt. mid. turb., post. ethmoid and sphenoid	20/100	Hyperplasia	Progress of optic atrophy checked
17.	Dr. Henry Hawkins....	Both	Papillitis	7 days	Hyper. mid. turb.	Negative	20/30 Rt. 20/100 Lt.	Left mid. turb., post. ethmoids and sphenoid	Normal	Hyperplasia	
18.	Dr. Alex. Quackenboss	Left	Acute retrobulbar neuritis	4 wks.	Def. septum; hyper. mid. turb.	Negative	20/100	Left mid. turb., post. ethmoids and sphenoid	Normal	Hyperplasia	Slight pallor of disk
19.	Dr. C. F. Worthen.....	Right	Acute optic neuritis	3 wks.	Marked hyper. mid. turb.	Negative	Fingers 3 ft.	Rt. mid. turb., post. ethmoids and sphenoid	20/70	Cystic mid. turb.	
20.	Dr. C. F. Worthen.....	Both	Chronic retrobulbar neuritis	4 mos.	Hypertrophic rhinitis	Negative	Rt. 20/100 Lt. 20/70	Local treatment	Nearly normal	Hyperplasia	
21.	Dr. P. H. Thompson...	Both	Chronic retrobulbar neuritis	9 mos. left 3 mos. rt.	Hypertrophy, both mid. turbs.	Negative	Lt. fingers 4 ft., Rt. 20/70	Both mid. turbs., post. ethmoids and sphenoid	20/200 Rt. Fingers 4 ft. left	Hyperplasia	Atypical multiple sclerosis
22.	Dr. G. S. Derby..... (M. C. E. & E. I.)	Right	Acute retrobulbar neuritis	7 wks.	Hyper. mid. turb.	Negative	Nil	Rt. mid. turb., post. ethmoids and sphenoid	Unimproved	Hyperplasia	Optic atrophy
23.	Dr. Alex. Quackenboss (M. C. E. & E. I.)	Right	Acute retrobulbar neuritis	8 days	Def. septum; hyper. mid. turb.	Negative	Nil	Sept., mid. turb., post. ethmoids and sphenoid	20/20—	Hyperplasia	Slight pallor of disk
24.	Dr. S. J. McDonald.... (M. C. E. & E. I.)	Right	Acute retrobulbar neuritis with some optic atrophy	11 days	Hyper. mid. turb.	Negative	Nil	Rt. mid. turb., post. ethmoids and sphenoid	Fingers 6 inches	Membranous sac in ethmoids	Partial optic atrophy
25.	Dr. W. N. Souter..... (M. C. E. & E. I.)	Left	Acute retrobulbar neuritis	9 days	Hyper. mid. turb.	Negative	Light perception	Left mid. turb., post. ethmoids and sphenoid	Normal	Pus in ethmoid	

* Massachusetts Charitable Eye and Ear Infirmary.

negative. Two days later the septum was resected, the right middle turbinate removed, and the right posterior ethmoids and sphenoid opened. The posterior ethmoid was unusually large, and located directly in front of the sphenoid, so that when opened at a depth of 3½ inches it was mistaken for that sinus. A small opening, however, was discovered near the septum, which led into a cell one-half inch deep, which proved to be a rather small sphenoid. The vision did not improve as rapidly as usual, and on the patient's discharge at the end of a week, fingers could be distinguished only at 5 feet. A severe cold was contracted on the way home, and for a day the vision became nil. Under hot irrigations the patient gradually improved. In two months, vision was 20/20 —, with some pallor of the disk.

CASE 24.—Mrs. B. M. T., aged 40, referred by Dr. S. J. McDonald at the infirmary, Jan. 19, 1920, with a diagnosis of retrobulbar neuritis, right, of three days' duration, had complete loss of vision. The pupil did not react to light. The blood vessels were rather small, the disk, pale. The right middle turbinate was somewhat obstructive posteriorly. Examination otherwise was negative. The roentgen-ray, Wassermann, medical and neurologic examinations were negative. An immediate operation was advised, but the consent of the patient could not be obtained, so that it was not until January 27, eleven days after the onset of the trouble, that she permitted me to operate. The middle turbinate, which proved to be much larger than it appeared, was removed, and the posterior ethmoids and sphenoid opened. In one of the posterior ethmoids there was a thick membranous sac, mention of which has previously been made. The patient was discharged four days later, with vision unimproved. Ophthalmologic examination revealed: "No light perception; pupil reacted slightly to light; motion normal; very slight pain on pressure over eye; disk more hazy and indistinct than in other eye, and the physiologic cupping absent, with a higher color to disk; blood vessels about the same in the two eyes." Five weeks after operation, examination revealed a well developed optic atrophy. The patient was, however, able to see fingers at 6 inches. This case is one in which the patient would probably have been benefited had she consented to an earlier operation.

CASE 25.—Mrs. J. M. P., aged 27, referred by Dr. W. N. Souter at the infirmary, Jan. 26, 1920, with a diagnosis of retrobulbar neuritis, right, of six days' duration, had had a blurring in the same eye some months previously, which had cleared up without treatment. Following a slight cold, large objects seemed in a thick haze. In six days there was barely light perception. Dr. Derby examined the fundus and reported "outline of disk somewhat blurred. Not as much physiologic excavation in left eye; vessels about the same size; fogginess of disk and higher color. Vision, right, 20/20. Question of light perception, left." Physical, dental, neurologic, roentgen-ray and Wassermann tests were all negative. The nasal examination was practically negative except that the posterior portion of the left middle turbinate seemed somewhat enlarged. January 29, nine days after the onset of the trouble, the middle turbinate was removed and the posterior ethmoids and sphenoid were opened. A small amount of pus was found in one of the posterior ethmoids, and the tissue was somewhat thickened. In two days the patient could count fingers at 6 inches. Vision improved rapidly so that in two weeks it was 20/30, and at the end of a month was normal.

GENERAL SUMMARY

Of the twenty-five cases here reviewed, operation was not performed in three (Cases 1, 11 and 20). In the first, the eye remained permanently blind. In the second, the patient died from a sarcoma; and in the third, the vision was improving when first seen and recovered under local treatment. In a fourth (Case 3) a hypertrophied middle turbinate was removed some time after the vision had returned.

Of the twenty-two operative cases there was improvement in all but three (Cases 10, 21 and 22). In one the eye had been practically blind some months. In another of five weeks' duration there was slight improvement at first, but pressure had continued so long that optic atrophy resulted. The third case was one of multiple sclerosis.

Normal vision was obtained in nine cases (Cases 2, 3, 5, 7, 8, 9, 17, 18 and 25).

There was marked improvement in four (Cases 6, 14, 19 and 23), but some optic atrophy.

There was only slight improvement in six (Cases 4, 12, 13, 15, 16 and 24), this being due to the chronic nature of the disease and the delay in operating.

In three there appeared to be a direct extension of the infection (Cases 11, 14 and 15).

The toxemia from pus found in eight cases seemed the chief factor (Cases 1, 4, 8, 9, 10, 12, 13 and 25).

Hyperplasia appeared the predominating lesion in fourteen (Cases 2, 3, 5, 6, 7, 16, 17, 18, 19, 20, 21, 22, 23 and 24).

In six, the nasal examination was considered negative (Cases 2, 4, 5, 7, 9 and 10).

In seven, roentgen-ray examination was positive (Cases 1, 2, 3, 4, 11, 12 and 15). Negative plates, let me add, by no means contraindicate an operation. This is especially so in hyperplasia, as only two of the fourteen cases showed any roentgen-ray findings.

The middle turbinate was removed in all the cases in which operation was performed, and the sphenoid opened in all but one (Case 3).

The posterior ethmoids are at present opened as a matter of routine. Unless suspected of infection, the other accessory sinuses are not disturbed. The complete ethmoid exenteration does not in most cases seem necessary.

The accompanying table summarizes the individual findings in the cases studied.

390 Commonwealth Avenue.

ABSTRACT OF DISCUSSION

DR. S. G. HIGGINS, Milwaukee: Be very sure of your diagnosis before you undertake an accessory sinus operation. I might possibly differ some with the essayist as to his technic in removing all of the middle turbinate, but something can still be learned as to the best technic in ethmoidal surgery. We have not the ideal operation as I understand it. We ought not to operate so frequently that the internist who refers our sinus cases has a larger series of negative results than he has positive results. As rhinologists we ought to require from the ophthalmologist a complete history which may aid us in making a diagnosis before we operate. If other things seem to be failing, operation is clearly indicated, and if you get a negative result it is to be hoped that no harm has been done.

DR. LEON E. WHITE, Boston: These cases were all rather extreme, and were referred by competent ophthalmologists after having been thoroughly investigated, as they felt that unless relief could be given at once, the eyes would be lost. I do not believe in operating on any patient that shows a tendency to improve; but it is very important to operate before it is too late. In the case I reported, of eleven days' duration, the woman declared there was nothing the matter with her nose. The eye men felt, as there were no other findings, that the trouble was probably in the accessory sinuses. There was a cyst in one of the posterior ethmoids and distinct pathologic conditions that were not evident on inspection. I want to emphasize the point that these cases cannot go too long, that we cannot waste too much time in investigating them. Dr. Stark made a good point in the discussion which he had prepared. In speaking of those cases which recover spontaneously, he said that when there

was a pressure sufficient to cause these symptoms there was probably some condition in the nose that needed attention; even though the patient recovers it is advisable to investigate thoroughly the condition, and if anything is found, it should be taken care of in order to prevent later complications, especially multiple sclerosis. An illustration of this occurred the day I left Boston.

NERVE BLOCKING FOR NASAL SURGERY *

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My object in this article is to give a brief description of nerve blocking by procain, as used in twenty-nine nasal operations, with complete anesthesia in all except two cases.

In order to produce anesthesia in either nasal chamber, one needs to inject only two points; namely, the exit of the nasal nerve from the orbit, and the region of Meckel's ganglion. In view of this fact, it will be of advantage to give a brief review of the anatomy concerned, according to Gray:

Meckel's (sphenopalatine) ganglion is deeply placed in the sphenopalatine fossa, close to the sphenopalatine foramen . . . and is situated just below the superior maxillary nerve. . . . Its sensory root is derived from the superior maxillary nerve. . . . Its motor root is derived from the facial nerve through the large superficial petrosal nerve, and its sympathetic, from the carotid plexus through the large deep petrosal nerve. These two nerves join together to form a single nerve—the vidian.

Branches of Distribution of the Sphenopalatine Ganglion.—These are divisible into four groups: . . . ascending, which pass to the orbit; descending, to the palate; internal, to the nose; and posterior branches, to the nasopharynx. . . . The descending or palatine branches . . . are three in number, anterior, middle and posterior. The anterior palatine nerve . . . gives off inferior nasal branches, which enter the nose through openings in the palate bone and ramify over the turbinated bone and middle and inferior meatuses. . . . The internal branches are distributed to the septum and outer wall of the nasal fossae. They are the superior nasal and the nasopalatine. The superior nasal branches, four or five in number, enter the back part of the nasal fossa by the sphenopalatine foramen. They supply the mucous membrane covering the superior and middle turbinated processes, and that lining the posterior ethmoidal cells, a few being prolonged to the upper and back part of the septum. The nasopalatine nerve also enters the nasal fossa through the sphenopalatine foramen; it passes inward across the roof of the nose, below the orifice of the sphenoidal sinus, to reach the septum, and then runs obliquely downward and forward along the lower part of the septum, to the anterior palatine foramen, lying between the periosteum and mucous membrane. It descends to the roof of the mouth through the anterior palatine canal.

The nasal nerve enters the orbit by way of the sphenoidal fissure between the two heads of the external rectus, and passes obliquely inward across the optic nerve beneath the superior rectus and superior oblique muscles, to the inner wall of the orbit. Here it passes through the anterior ethmoidal foramen, and, entering the cavity of the cranium, traverses a shallow groove on the front of the cribriform plate of the ethmoid bone, and passes down through a slit by the side of the crista galli into the nose, where it divides into two branches, an internal and an external branch. The internal branch supplies the mucous membrane near the fore part of the septum of the nose. The external branch descends in a groove on the inner surface of the nasal bone and supplies a few filaments to the mucous membrane covering the fore part of the outer wall of the nares as far as the inferior turbinate process; it then leaves the cavity of the nose, between the lower border of the nasal bone and the upper lateral cartilage of the nose, and, passing down beneath the compressor nasi, supplies the integument of the ala and the tip of the nose, joining the facial nerve.

PROCEDURE OF INJECTIONS

A. *Nasal Nerve.*—1. Instil a few drops of 4 per cent. cocain into the conjunctival sac to prevent pain on inserting the needle.

2. Lift the upper lid upward and inward by placing the thumb at the inner and upper margin of the orbit and direct the patient to look outward. Insert the needle through the plica semilunaris just below the upper lacrimal puncta, directing it slightly inward and upward, at an angle of about 30 degrees. The needle will soon strike the os planum, and on moving the point of the needle up and down, when inserted about 2 cm. (¾ inch) in depth; it will engage in a groove the anterior end of which terminates in the anterior ethmoidal foramen. Here the nasal nerve leaves the orbit. Inject about 1 c.c. of 1 per cent. solution of procain.

B. *Meckel's Ganglion.*—1. Brush the hard palate with a solution of cocain along the root of the molars.

2. Place the index finger on the hamular process of the internal pterygoid plate and bring it forward until a depression, the lower end of the posterior palatine canal, is palpated.

3. Place the needle at an angle of about 45 degrees with the upper teeth and along the second molar about ⅛ inch from its root. This brings the needle near the canal, which it usually enters after three or four attempts. Pass the needle upward about 2.75 to 3.5 cm. (1 to 1¼ inches), when the point will be near Meckel's ganglion. Inject from 1 to 1.5 c.c. of 1 per cent. solution of procain.

The injection of the nasal nerve is a very easy procedure. One can readily tell by careful manipulation when the needle is engaged in the groove near the anterior ethmoidal foramen. The injection of the Meckel's ganglion is a little more difficult, as one has to locate the canal, but usually this is not hard to do. If the needle be placed a little too far back, it may pierce the soft palate, in which case the fluid may run down the nasopharynx. If it be placed forward, it may puncture a vessel on the hard palate and cause a little bleeding. The second molar is an excellent guide for the site of injection, if one remembers that the canal is close to the margin of the hard palate. I had considerable difficulty in one case, as I took the first for the second molar. The patient finally remarked: "My wisdom tooth was pulled." From this information I soon located the canal.

Force was not used in passing the needle through the canal, as the needle passes rather easily when properly manipulated.

The Luer's glass syringe (1.5 c.c.) was used and found very satisfactory. Straight needles 1½ inches long, ranging in gage from 23 to 25, are very satisfactory for injecting Meckel's ganglion. They should be of good quality, and have neither a sharp nor blunt end, but rather a bevel point. A bevel point is easily obtained by filing off the sharp end of the ordinary needles. Any small needle about 1 inch long does well for the injecting of the nasal nerve.

* Read before the Section on Laryngology, Otology and Rhinology at the Seventy-First Annual Session of the American Medical Association, New Orleans, April, 1920.

The following objections have been considered in regard to the foregoing injections: (*a*) Danger of carrying infection into the orbit. (*b*) Puncture of the roof of the orbit by undue force. (*c*) Injury to blood vessels in the posterior palatine canal. (*d*) Carrying infection into the region of Meckel's ganglion.

So far none of these objections have been encountered. Normally the conjunctival sac contains very few bacteria. If deemed advisable, one may use 4 per cent. protargol, as an antiseptic for the conjunctival sac. One could puncture the roof of the orbit with the needle, but such force is to be considered poor manipulation on the part of the operator. Chances of injuring the vessels in the posterior palatine canal seem small, as the needle with a bevel point is being passed parallel to the vessels. Even if the fluid is injected directly into the vessel, the amount is not sufficient to give any alarming toxic symptoms. If one is afraid of infection, alcohol may be rubbed over the site of injection.

Four of the patients had a little edema and discoloration of eyelids, which passed off in a day or so. A few had paralysis of the internal rectus, which passed off after the effect of the procain wore off.

Sterile solutions of procain, varying in strength from 1 per cent. to 2 per cent., were used. One per cent. gave good anesthesia within about five minutes, and lasted thirty minutes or longer. Less than 2 grains were used in all but one case, in which 4 grains were used. In the majority of cases "Novocain and L-Suprarenin Tablets 'A,'" made by Farbwerke-Hoecht Company, New York, were used. Each tablet contains novocain 0.125 gm., and l-suprarenin, 0.000125 gm. (which equals about 2 minims of 1 : 1,000 epinephrin). L-suprarenin is a synthetic preparation made by the above named firm. In other cases, procain to which sterile epinephrin was added in proportion of from 6 to 10 minims to 10 c.c. of 1 per cent. solution was used. When epinephrin was added to procain the two were mixed (usually in the syringe) in the foregoing proportion, and injected almost immediately. If mixed and allowed to stand for a while, the procain loses a large part of its anesthetic power. At first no precaution was taken as to whether the physiologic sodium chlorid solution, the solvent, was alkaline or acid. After failing to get proper anesthesia in two cases, I wrote the company which made the tablets "A" and was informed by them that if the solvent was alkaline, it would destroy the anesthetic property of the procain. After this the solvent was tested to be sure it was neutral or only slightly acid, and there was no more trouble in getting proper anesthesia. In order to obtain as little bleeding as possible, it is advisable to pack the nasal chamber with about equal parts of 5 per cent. cocain and epinephrin.

A semiupright position was used for the patients, and was found excellent both for the patient and the the operator. It relaxes the patient and enables him to be comfortable. This position is objected to by some operators, but there is only one answer and that is: "I must see the field of operation before I operate in the posterior ethmoidal region."

Twenty-two of the twenty-nine operations were performed at the Massachusetts Charitable Eye and Ear Infirmary, Boston, during the summer and fall of 1917. They were of all varieties—ethmoid, sphenoid, intranasal frontal, intranasal antrum, submucous resection and turbinectomy. I was more impressed with the anesthesia for sinus than for septal work, as good anesthesia of the septum is obtained by packing. The war interfered with this work, and very little has been done since 1917.

This article is offered more as a preliminary report, rather than a report of work completed. I hope to make a report later on, as to just which part of the nose is anesthesized by injecting Meckel's ganglion, and which part by injecting the nasal nerve separately.

ABSTRACT OF DISCUSSION

DR. H. H. MARTIN, Savannah, Ga.: Some time ago when Sluder first advocated the injection of Meckel's ganglion, I was visiting with Dr. Reaves and his brother, and they had for a year or more been injecting Meckel's ganglion through the posterior palatine canal. It is easily as effective as injecting through the nose, but in my hands it has not been done so easily. I prefer the Sluder method, that is, a long needle inserted through the posterior end of the middle turbinate, getting it in the right position, and giving it a slight tap with a hammer. Dr. Reaves' idea of injecting the exit of the nasal nerve is entirely new to me. I had not heard of it before, but in his hands it certainly seems perfectly practical. I do not see why it should not be used in a great many cases. Personally, however, I do not believe in injecting local anesthetics when you can apply them topically. The topical application is much safer, as a rule. However, a weak solution of procain injected into Meckel's ganglion will certainly produce an anesthesia of every ramification of that organ. Many men with whom I have been in correspondence inject the ganglion first, and then by placing a cotton pledget covered with cocain paste high up between the septum and the lateral wall of the nose anesthesia is produced. Sluder applies a strong solution of cocain directly over the sphenopalatine foramen.

DR. ROBERT G. REAVES, Greensboro, N. C.: This is simply my observation. In regard to the Sluder method, I have only tried it a few times, but I never was certain whether I was going into the cranial cavity or not. I was afraid. This way, with a needle one and one half-inches long, you would have to have a very small patient before you got into the cranial cavity.

EFFECTS PRODUCED ON BLOOD PICTURE BY OXYGEN INFLATION OF PERITONEAL CAVITY *

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Our attention has been directed of late to roentgenograms of the abdominal organs in which the outlines were brought out by the use of oxygen inflation of the peritoneum. Last fall I decided to make use of this technic, and began by making several peritoneal inflations in my service at the Beth Israel Hospital. Credit for the original idea of the use of oxygen as an aid in roentgen-ray diagnosis of the abdomen must be given to Kelling. His views were published in 1902. The method received little or scant attention until Jacobaeus took it up eight years later, and he was followed by several others. Stewart and Stein again discussed the procedure. They state that if the peritoneum is distended with oxygen, the gas will be absorbed within twenty-four hours. This is contrary to my observations. Dr. Charles Gottlieb and I have

* Read before the Eastern Medical Society of New York, March 12, 1920.

observed that, while much of the gas may be absorbed within twenty-four hours, the presence of some of it can be demonstrated with the roentgen ray for two weeks after the injection. Before introducing the oxygen into the peritoneal cavity, I decided to observe what effect 1,000 or 2,000 c.c. of oxygen would produce on the blood picture of the subject when introduced into the closed cavity of the peritoneum. I had observed in five patients at the Beth Israel Hospital in whom the peritoneal cavities were inflated with 1 or 2 liters of oxygen that the number of erythrocytes was increased from 80,000 to several hundred thousand after the oxygen inflation. The oxygen was introduced into the peritoneal cavity through a cannula passed through the abdominal wall. I found that the injection of more than 1 or 2 liters caused unnecessary discomfort to the patient. Our first case was a postoperative empyema.

TABLE 1.—RESULTS OF INFLATIONS

Cases	Red Blood Cells: Before Injection of Oxygen	Red Blood Cells: 24 Hours After Inflation	Net Increase in Red Blood Cells
1. Postoperative empyema	4,000,000	4,080,000	80,000
2. Tumor of kidney	3,960,000	4,800,000	840,000
3. Suspected ulcer of stomach	4,000,000	5,600,000	1,600,000
4. Subphrenic abscess	3,680,000	4,160,000	480,000
5. Pelvic tumor	5,730,000	6,260,000	530,000

RESULTS OF FURTHER INVESTIGATIONS

As the results were so gratifying, I followed these observations with similar ones on some of the chronic invalids of the Montefiore Hospital. About 1,000 c.c. of oxygen were injected into the peritoneal cavity in two cases of splenomegaly and in a case of inoperable carcinoma of the stomach. The two cases of splenomegaly gave positive Wassermann reaction. The results of these inflations are shown in Table 2.

TABLE 2.—RESULTS OF INFLATIONS IN CHRONIC INVALIDS

Cases	Red Blood Cells: Before Injection of Oxygen	Red Blood Cells: 24 Hours After Inflation	Net Increase in Red Blood Cells
1. Splenomegaly	3,920,000	6,200,000	2,280,000
2. Splenomegaly	4,400,000	6,000,000	1,600,000
3. Inoperable carcinoma	6,280,000	6,600,000	320,000

EFFECT IN PERNICIOUS ANEMIA

We also observed results in a case of the fatal form of pernicious anemia. The patient's red blood cell count was only 480,000, and the count made twenty-four hours after the peritoneal cavity had been inflated showed a net increase of 1,680,000, or a total of 2,160,000. I have not been able to find similar reports by others.

POSSIBLE MECHANICAL EFFECT

I believe that the results of our observations may be due to the mechanical effect of the pressure of the gas on the larger abdominal venous trunks. Some support to this contention is given by the results obtained several weeks ago by Dr. Max Kahn, who performed some animal experiments for me in the laboratory of the Beth Israel Hospital. Pneumoperitoneum produced in six rabbits inflated with oxygen showed in each of the six rabbits injected a net increase of from 200,000 to 900,000 red blood cells. He then inflated the peritoneal cavity of three rabbits with nitrogen gas, and the results were similar. The blood taken from these rabbits showed an increase in the red blood cell count of 200,000, 300,000 and 500,000, respectively.

THERAPEUTIC SIGNIFICANCE

I am not prepared at this time to make any statement as to the value of this procedure as a therapeutic measure. I have no direct evidence that oxygen introduced into the closed peritoneal cavity has any direct stimulating effect on the hematopoietic organs and therefore I am not prepared to suggest that the method might be utilized in the treatment of anemia. On the other hand, my observations lead me to believe that the gas acts as a splint by giving support and pressure to the larger venous trunks of the abdomen and thus might be utilized in the treatment of shock.

CONCLUSION

As far as I have gone, I have concluded that oxygen injected into the peritoneal cavity is followed by an appreciable increase in the number of red blood cells in the peripheral circulation, which is demonstrated by the blood count. Further experiments will be undertaken with a view to determine definitely the value of this measure.

969 Madison Avenue.

Clinical Notes, Suggestions, and New Instruments

BILATERAL EMPYEMA; STAPHYLOCOCCUS PYEMIA *

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This rather unusual case presents many interesting and difficult problems arising in the course of an infection. Beginning as influenza, the infection ran a most profoundly severe and toxic course because of the presence of *Staphylococcus aureus* involving both middle ears, both parotid glands, both lungs, both pleurae and numerous other points of infection, and it terminated with a destructive inflammation of the crest of the right ilium. The disease processes encountered were influenza, bilateral otitis media, mastoiditis, bilateral septic parotitis, bilateral bronchopneumonia, bilateral pleurisy, bilateral empyema, pyemia, pressure necrosis, trophic neuritis, and osteomyelitis of the ilium. The patient, though recovery was many times despaired of, safely weathered these attacks for a period of six months or more, the heart never failing, the renal organs remaining undamaged, the gastrointestinal tract continuing to function, and final recovery being attained.

REPORT OF CASE

A boy, aged 14 years, became sick, March 1, 1919, and was referred to me by Dr. Hartwig Kandt, who directed the medical treatment of the case. The only facts pertinent to the disease are those of his present illness. The onset was sudden, with general body pains, chilly sensations, congestion of the nasopharynx, and prostration, pointing to the diagnosis of influenza. At the outset the type of toxemia was seen to be most severe, with a temperature range up to 105, pulse rate up to 140, and respirations of between 35 and 50. Blood pressure was subnormal, with a systolic reading of 100, and diastolic of from 50 to 60. Cough was present with mucus expectoration, several early attacks of epistaxis, sharp pain in the left chest, and increasing delirium.

The organism responsible for the sequence of pathologic conditions that followed was *Staphylococcus aureus*, and on the fifth day of the disease it was recovered from the sputum

* Read before the Medical Society of the County of Kings, Jan. 20, 1920.

in great preponderance. The leukocyte count was low, being 7,400, with 70 per cent. polymorphonuclears; the urine was normal except for a trace of albumin. On the eighth day a slight discharge was noted from the right ear, and both drums were later incised, the culture from the discharge showing in each case *Staphylococcus aureus.* Four days later a swelling was noted over the right parotid, which was painful, tender and red. Meanwhile signs of consolidation of the left lung had developed, and the condition of the patient was that of a tremendously severe type of toxemia. The following day the opposite parotid became tender and swollen, and an area of infection was noted on the outer aspect of the left arm. Delirium was constant, the patient was restless and talkative, urination was frequent and incontinent, and both ears discharged profusely.

On the sixteenth day of the disease, aspiration of the left chest gave 30 ounces of a clear serum, culture from which showed *Staphylococcus aureus.* The right parotid was also incised at this time, revealing a burrowing infection of the gland with extensive necrosis, the same organism being recovered in the culture. Next day the left parotid was incised, and a similar condition found, due to the same organism. On the eighteenth day the infection of the left arm was likewise opened and the same organism recovered. Blood cultures taken at this time and a week later were, however, sterile. The white cell count had increased to 44,000 and the polymorphonuclears to 92 per cent.

During this period, the second and third weeks of the disease, the condition of the patient continued to be most critical, with a temperature range of 102 to 104, a pulse rate of 110 to 120, respirations of 30 to 40, active delirium, involuntary urination, etc. But the intake of fluid was ample, the urine output being 45 or more ounces a day, with no evidence of a failing heart, and blood pressure near the normal.

On the twenty-fourth day, fluid aspirated from the left chest had the appearance of creamy pus, and the patient was removed to the hospital for the necessary thoracotomy. Under 2 per cent. procain, 2 inches of the left ninth rib, in the posterior axillary line, were resected, 16 ounces of pus evacuated, and drainage maintained by means of two large rubber tubes. The parotids, still discharging from several pockets, were more widely incised, and Dakin's tubes inserted. Hemanalysis revealed 4,496,000 red cells, 75 per cent. hemoglobin, 25,000 leukocytes, and 69 per cent. polymorphonuclears. The Wassermann test was negative, and the spinal fluid presented a normal count and sterile culture. The reaction to this operative procedure was not alarming, the primary rise of temperature to 105 and over being followed on the third day by a general fall to between 101 and 102, with no improvement in the mental condition, etc.

About this time the opposite lung became involved, progressing to complete consolidation of the entire lower lobe by the thirty-fourth day of the disease, accompanied by embarrassed respirations of from 60 to 70; but the patient's mind was clearer. The blood picture was less favorable, because of rather rapid type of hemolysis, showing 3,216,000 red cells, and 55 per cent. hemoglobin on the thirty-first day, and 2,936,000 red cells and 50 per cent. hemoglobin two days later. The increasing anemia was plainly apparent to the eye, all the wounds appearing pale and sluggish with profuse discharges, and showing a tendency to spread. Moreover, three areas of pressure necrosis had developed over the sacrum and the posterior spines of the ilium, as well as a spot of dry gangrene on the glans penis. The mastoid processes were very tender, and the overlying skin edematous. It was quite evident that the patient was losing ground, and the outlook appeared gloomy.

He had begun to yield to the added infection due to the involvement of the opposite lung, and the progressing pyemia. At this critical moment resort was had to blood transfusion, 1,010 c.c. being given after the Miller method. Next day the red cell count had jumped to 4,450,000, and the hemoglobin to 68 per cent., and with this the mind was clearer, the skin pink, the heart sounds good, the lungs unchanged. The change in the appearance of all the wounds was most noticeable, showing active, pink and healthy granulations, and a marked lessening of the discharge.

Flatness of the right lower lobe persisted, and on the thirty-seventh day 1,050 c.c. of cloudy fluid were withdrawn, culture from which yielded the staphylococcus. Favorable signs were the nearly healed parotid wounds, the improved condition of all bed sores, and a clearer condition of the mind.

The problem now was the procedure to be adopted for the treatment of the second empyema, in the presence of the opposite unexpanded lung with its unhealed thoracotomy wound. The dangers of a second thoracotomy at this time were obviously too great to be undertaken. The use of a suction apparatus, such as the Phillips, was out of the question, because of the other surgical conditions present, and also the unreliability that it had shown in my experience with it. Therefore, to maintain the capacity of the new cavity at a minimum and prevent lung compression, and at the same time to evacuate the pus accumulation and allow for the formation of lung adhesions, repeated and frequent aspirations of the pleural cavity were resorted to, by means of a Chapman water pump attached to a nearby faucet. In this way from 75 to 175 c.c. of pus were aspirated at intervals of from two to four days. During these days three more abscesses were incised and the staphylococcus recovered each time. Also an area of dry gangrene appeared over the left heel, and foot drop due to trophic neuritis was noted.

An effort to sterilize the fluid in the right chest was made by the use of 2 per cent. solution of formaldehyd in glycerin injected into the cavity after each aspiration; but the only result apparent was a change in the character of the discharge from a thick pus to a thin, reddish fluid. The culture still showed the causative organism.

Meanwhile the ear drums healed, the mastoids had cleared, and the parotids were nearly well. The management of the condition was maintained as described for more than three weeks, and some improvement was manifest in the general condition of the patient; but about the sixtieth day of disease a downward trend was noted. The patient was more irrational, having restless nights, and taking less nourishment. The temperature assumed the septic type. The cavity of the left chest measured at this time only 6 ounces. The red cell count showed a fall of one-third million, and the hemoglobin dropped from 78 to 65 and down to 60 per cent. in a few days. The leukocytes increased from 22,000 to 38,000, and the red cell count was slightly above 3,000,000. The temperature showed a sharp afternoon rise to 103, and the pulse and respiratory rates revealed an upward trend. A further abscess of the left sacral region was opened and the staphylococcus obtained.

It now became apparent that improvement had ceased in the general condition of the patient, and, on the contrary, there was a general retrogression, accompanied by a rather rapid degree of hemolysis. Further delay in undertaking the second thoracotomy seemed inadvisable, and on the sixty-sixth day of disease, following a blood transfusion of 430 c.c., the eighth right rib was resected, and about 200 c.c. of pus evacuated. This cavity was treated after the third day by the Dakin technic (as had been done in the case of the opposite chest). There was practically no unfavorable reaction to this procedure, and improvement promptly began. During the period of the following ten days the temperature, pulse and respiratory rate decreased measurably, the red blood cells increased one-half million, the leukocytosis decreased, the mind became clear at all times, and the patient began to evidence interest in events.

Progress continued favorable, the left chest healing on the one hundred and tenth day and the right on the one hundred and eighteenth, and the patient returned to his home on the one hundred and twenty-ninth day of his disease, where the rate of progress was maintained, and all wounds went on to complete healing.

At this time, four and one-half months from the onset, complaint was made of pain and tenderness over the crest of the right ilium, and all evidences of a localized osteomyelitis appeared. The patient was again removed to the hospital, and about 3 inches of the crest of the ilium to a depth of one-half inch was found to be necrosed, and was excised. The recovery from this operation was prompt. All

the wounds had healed by seven and one-half months, the foot drop had practically cleared, and the patient was restored to complete health.

322 Park Place.

AN APPARATUS FOR THE USE OF ETHYL CHLORID WITH OTHER AGENTS

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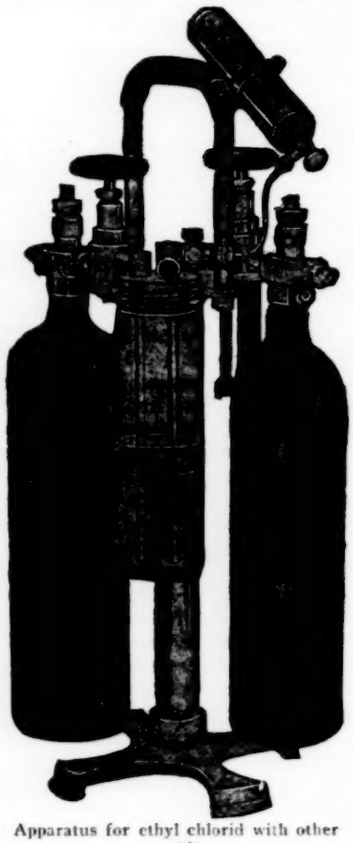
Lecturer on Anesthesia, Long Island College Hospital

In 1903, Hewitt[1] suggested that ethyl chlorid might be combined with nitrous oxid gas for surgical anesthesia. He states that this combination is useful only for induction or for very short periods. His method of employment was somewhat uncomfortable, for it necessitated the use of one hand to manipulate or hold the container. He recognized the value of the method, and his reasons are as good now as then, and his success can be easily duplicated.



Apparatus for ethyl chlorid with other agents.

The apparatus herewith illustrated obviates all the older difficulties, and because of its other parts makes it feasible to use ethyl chlorid with, before or after another anesthetic, or alone as the anesthetist chooses. Those who are familiar with the original apparatus will quickly notice that the change consists merely in providing an attachment to hold the Gebauer tube on the handle, and in utilizing the opening intended for the manometer to receive the tube from the ethyl chlorid container. Furthermore, one is now enabled to exhibit any number of combinations of agents by simply using a double reservoir tube holding both ether and chloroform; or the quadruple form, adding anesthol and any other agent desired.

I am enjoying my modification particularly in the case of patients the contour of whose face makes it difficult to apply a mask air-tight; in nose and throat operations and in gas-oxygen anesthesias when I would otherwise use " a little ether," and in that type of patients who do not quickly succumb to gas alone. I would suggest its availability, however, not only for the short case to which Hewitt limited himself, but also for any length of time and for any operation.

458 Ninth Street.

DOUBLE TUBAL PREGNANCY: ONE TWINS*

J. H. CARSTENS, M.D., DETROIT

Tubal pregnancy is not so rare as it formerly was supposed to be, but double tubal pregnancy is quite rare, and comparatively few cases have been recorded. Quite a few cases have been reported of a simultaneous tubal and normal pregnancy. Having had a case of a double tubal pregnancy, and one of these twins, I certainly thought that it ought to be put on record, as I have not been able to find a report of any case in a hasty glance through the literature.

REPORT OF CASE

Mrs. W. N., aged 23, married seven months, with a good family history, and no sickness herself except some of the diseases of childhood, had always menstruated regularly, with slight spasmodic pain. The last normal menstruation occurred, Oct. 25, 1919. November 23, she had some pains, cramps as she called them, and a slight showing. These continued, sometimes quite severe for an hour or two, and then not noticeable for the balance of the day. She consulted me to find out whether or not she was pregnant. She was a healthy looking woman, with a nice pink complexion. On examination, I could map out the uterus easily, apparently slightly enlarged, with soft cervix. To the right was a well marked swelling, not hard or fluctuating. On the left side, I could not detect anything abnormal.

This was evidently an extra-uterine pregnancy, and I urged a prompt operation; but it took several days before I could get her to the hospital. December 5, I operated, and found the uterus in the normal place, and the right tube enlarged very much and empty, so that the thumb could easily enter to the junction with the uterus. The culdesac was a mass of blood, coagulated and of various colors, showing that it had been deposited there on various days. There was comparatively little: I should say 3 or 4 ounces. No attention was paid to it then. The tube was removed, but an effort was made to keep it patulous by sewing the mucous membrane to the serous covering. The culdesac was now carefully cleansed. On looking at the left side, I found the tube absolutely closed, very dark and about 2½ inches long, and 1½ inches in diameter, evidently another tubal pregnancy. This was carefully removed, and also an effort made to keep the tube patulous by stitching the mucous membrane to the serous covering at the horn of the uterus. The abdomen was closed with plain sterilized catgut, and the woman made an uneventful recovery.

On opening up the left tube, we found two small fetuses about three-fourths inch long. I should judge that the right tube must have been a pregnancy of six weeks, and the left one, containing the two, of about three weeks.

NITROBENZENE POISONING WITH CYANOSIS

REPORT OF CASE

FRANK G. SANDERS, M.D., FORT WORTH, TEXAS

Several cases of methemoglobinemia due to some poisonous substance in shoe dye have been reported in the literature recently.[1] In the cases occurring at Camp Joseph E. Johnson and Camp Jackson, the cyanosis and symptoms of poisoning were found to be due to nitrobenzene, a constituent of the shoe dye used. In the former camp the cases occurred among recently commissioned officers who had had their puttees and shoes dyed and had worn them immediately. Recovery in these cases was prompt, taking place generally within twenty-four hours.

On the evening of Feb. 7, 1920, at about 6:30, a well dressed young man was brought into the Johnson and Beall Hospital. He was a railroad employee and had been in excellent health until the present afternoon. He had spent the afternoon at the theater and had gone to the interurban station to take the 6 o'clock car. The last thing he remembered was looking at his watch and noting that it was 3 minutes to 6. The person who brought him in stated that he had driven up to the mail box about 6 o'clock and had found the patient leaning over the package box apparently unconscious. He had brought the man directly to the hospital.

The patient was of good physique. He was conscious, but seemed confused, and said that he was dizzy and that his chest was full of something. He was markedly cyanosed

1. Hewitt, F. W.: Tr. Brit. Dental Assn., 1903.

* Read before the Detroit Surgical Society, April 9, 1920.

1. Stifel, R. E.: Methemoglobinemia Due to Poison by Shoe Dye, J. A. M. A. **72**: 395 (Feb. 8) 1919; Report of a Case of Cyanosis at Camp Jackson, S. C., Due to Poisoning from Shoe Dye, ibid. **72**: 592 (Feb. 22) 1919.

and gave the appearance of being intoxicated. The skin was cool and moist, the temperature normal. The heart and lungs were negative, as was the abdomen. During the examination a very decided odor of nitrobenzene became apparent, and this odor was traced to his shoes. Further questioning revealed the fact that the patient had had his shoes dyed immediately before going to the theater, and that he had sat in that poorly ventilated place all the afternoon breathing the fumes from his shoes. The shoes were very tight also, and direct absorption might have been a factor. The patient denied having a drink of any kind or any unusual food.

The man's shoes were removed and he was placed by the open window. Within an hour he was able to go home, with some assistance. He was advised to keep his shoes away from him and to stay by the open window. By the evening of the next day, his cyanosis had disappeared along with the subjective symptoms, and the patient was able to return to his work apparently none the worse for his experience.

GANGRENE OF LEG FROM THROMBOSIS OF POPLITEAL ARTERY FOLLOWING CORRECTION OF DEFORMITY *

JOHN JOSEPH NUTT, M.D., NEW YORK

This case is reported as bearing on the danger to which the popliteal vessels are exposed by forcible correction of deformities at the knee. Calot speaks of such an accident as "scarcely conceivable in spite of what is said in certain books. I have never observed it in my practice." Tubby says: "Others prefer sudden or complete reduction, although it must not be forgotten that such a procedure is accompanied by grave risks; these are rupture of the popliteal artery, which has occurred . . ."

REPORT OF CASE

W. B., aged 8 years, admitted to the State Hospital for Crippled and Deformed Children, Aug. 27, 1919, with a diagnosis of tuberculous disease of the knee, which had not been normal since the child was 2 years of age. Twice, for indefinite periods, the child had been in hospitals and some sort of operation had been done, as scars were present on the posterior surface. From the indefinite history, I assume that these operations were simply opening of abscesses. Discharging sinuses were said to have been present at different times.

The right knee was flexed, the thigh and leg much atrophied; the patient walked with a crutch, bearing no weight on the leg; there was no redness and no heat, the joint being immovable and in flexion of 135 degrees. Roentgenograms revealed that there had been an extensive rarefying osteitis, especially of the tuberosities of the tibia, followed apparently by a laying down of lime salts. The diagnosis from the examination was: arrested tuberculous disease of the knee.

September 14, the patient was placed under an anesthetic. Attempts made to straighten the knee were futile, no movement being possible. The knee was then opened and a resection performed. The tibia showed marked signs of previous activity of the infection, but fairly healthy bone was easily reached. The slice from the condyles exposed normal bone. Reduction of deformity was now accomplished but not without considerable force to overcome resistance in the posterior tissues. Plaster of Paris was applied from the toes to the groin. There was no complaint from the patient nor any signs of temperature until the sixth day, when the temperature shot up to 104, the pulse became correspondingly rapid, and discoloration of the toes appeared. Circulation in the toes had been examined twice daily and found to be excellent each time, so there is no question that it did not appear until the sixth day. The plaster of Paris was immediately removed, but gangrene extended up the leg and soon reached the junction of the upper and middle third, where it seemed to be arrested. The condition of the patient was so markedly septic that amputation was decided on.

October 1, this was performed at the junction of the middle and lower third of the femur. The femoral artery did not bleed and was found to be plugged. This part of the thrombus extended about one-half inch upward from the point of division. The recovery of the patient was satisfactory in every way. Careful dissection of the popliteal artery with slides of sections, by Dr. Alexander Frazer, showed the existence of the thrombus originating at the beginning of the posterior tibial artery and extending upward, as pointed out above, to the point of amputation. Dr. Fraser considers it without doubt thrombus of septic origin, and not traumatic. As the wound, from the day of resection, at no time showed signs of infection, I believe the infection must have arisen from an old nidus, which was aroused to activity by the traumatism at the time of operation. If this is correct, we may consider this case an evidence of the danger of forcibly overcoming a deformity when scar tissue is present; but it should not be considered as one of thrombosis arising from a traumatic injury to the vessel's walls from the correction of the deformity.

853 Seventh Avenue.

* Read before the Section on Orthopaedic Surgery, Academy of Medicine, Jan. 23, 1920.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

STREPTOCOCCUS VACCINE (See New and Nonofficial Remedies, 1920, p. 290).

Gilliland Laboratories, Ambler, Pa.

Streptococcus Vaccine.—Made from hemolytic streptococci, 50 per cent., viridans (green-producing) streptococci, 40 per cent., and non-hemolytic streptococci, 10 per cent. (a number of strains of each type are included), and suspended in physiological solution of sodium chloride; three cresols, 0.25 per cent. is used as a preservative. Marketed in packages of four syringes containing, respectively, 125, 250, 500 and 1,000 million killed bacteria; in packages of four 1 Cc. ampules containing, respectively, 125, 250, 500 and 1,000 million killed bacteria; also in vials of 5, 10 or 20 Cc. containing 1,000 million killed streptococci per Cc.

Dichloramine-T-Abbott (See New and Nonofficial Remedies, 1920, p. 139).

The following dosage form has been accepted:

Tablets Dichloramine-T-Abbott, 4.6 grains.—Each tablet contains dichloramine-T-Abbott 4.6 grains.

SOLUTION ARSPHENAMINE-LOWY.—An aqueous 0.5 per cent. solution of arsphenamine, possessing the proper degree of alkalinity.

Actions and Uses.—The same as those of arsphenamine (see New and Nonofficial Remedies, 1920, p. 36).

Dosage.—Solution Arsphenamine-Lowy is supplied in ampules of 80 c.c. and 120 c.c. These ampules should not be used after the date stamped on the label of each package or if the degree of coloration of the solution is greater than that of a control tube which accompanies the package.

Prepared by the Lowy Laboratory, Inc., Newark, N. J. U. S. patent and trademark applied for. Licensed for interstate sale by the U. S. Treasury Department under the "act to regulate the sale of viruses, serums, toxins and analogous products" as conforming to the regulations for the control, sale and manufacture of arsphenamine, issued June 30, 1919.

Ampules Solution Arsphenamine—Lowy 80 Cc.—Each ampule contains solution arsphenamine-Lowy 80 Cc. (representing arsphenamine 0.4 Gm.): a sterile needle for intravenous injection and sterile rubber tubing are supplied with each ampule.

Ampules Solution Arsphenamine—Lowy 120 Cc.—Each ampule contains solution arsphenamine-Lowy 120 Cc. (representing arsphenamine 0.6 Gm.): a sterile needle for intravenous injection and sterile rubber tubing are supplied with each ampule.

Solution Arsphenamine-Lowy is prepared by dissolving arsphenamine (using the particular brand desired by the purchaser) in fresh, distilled water, carefully neutralizing with sodium hydroxide solution and sealing in ampules under a partial vacuum, the concentration being adjusted so that 100 Cc. of solution represents 0.5 Gm. of arsphenamine.

Solution Arsphenamine-Lowy is a clear yellow liquid which, depending on the brand of arsphenamine used, varies from a canary yellow to a greenish yellow.

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SATURDAY, MAY 29, 1920

PELLAGRA

The etiology of pellagra has attracted the consideration of a number of investigators who have been able to study it on an unusually large scale and with exceptional facilities. In this country the zeist theory, which related pellagra in some way to the dietary use of maize and maize products, has been finally abandoned. An exclusive diet of corn is unquestionably inadequate; and corn damaged by microbiotic changes may well be harmful at times to persons ingesting it. But no adequate review of the actual incidence of pellagra, as it has occurred in different places and among different peoples, will any longer justify the assumption that the pathogenesis of the disease is concerned primarily with a corn factor. Pellagra may occur without the use of corn.

Epidemiologic studies showing peculiar localized occurrences of pellagra have fostered the natural conclusion that infection takes a part in its appearance. In a noteworthy contribution published in 1914, Goldberger [1] of the U. S. Public Health Service presented striking facts antagonistic to the theory of a pellagra infection but favorable to the long alleged relationship between diet and the disease. He pointed out that in some institutions, among the inmates of which pellagra was either epidemic or had long been endemic, the nurses and attendants, drawn from the class economically identical with that most affected in the population at large, appeared uniformly to be immune, although living in the same environment and under the same conditions as did the inmates, and many of them also in frequent and intimate contact with cases of the disease. Neither contact nor insect transmission seemed capable of explaining this remarkable exemption of one of the two classes of residents. The suggestion was made that the explanation was to be found in a difference in the diet of the two groups; for it was observed that although the nurses and attendants appeared to receive exactly the same food as did the inmates, there was, nevertheless, a difference in the diet of the two groups, in that the nurses and attendants, being in a favorable position to choose from what was provided, selected the best for themselves. They were also free to supplement the institution diet in any manner they pleased.

Since 1914, the study of the pellagra problem has been vigorously prosecuted by the U. S. Public Health Service. The continued investigations conducted by Goldberger and his co-workers [2] have not altered the original suggestion that pellagra can be eliminated by attention to the dietary factor. The trend of the latest evidence [3] is to show that basically the diets of the nonpellagrous and of the pellagrous households (of comparable economic status) in the communities and at the season studied are much the same, the only outstanding difference being a more liberal supply of the foods of the animal protein group in the diet of the nonpellagrous households. The difference between these diets seems to be one of degree, not of kind.

In practical experience, then, the preventive value of milk and of fresh meat seems to have been demonstrated. We are now assured by the latest government report that the total fuel supply—the calories of the diet—is not an essential factor in the production of pellagra. It is admitted that the total intake of protein in pellagrous households is apparently somewhat smaller than is the case in the nonpellagrous homes, but the minimum of safety is not believed to be reached in the region investigated. There is no overconsumption of carbohydrates, on which some stress has been placed in certain quarters. Goldberger therefore believes that meat and milk function advantageously by improving the quality of the protein in diets that have only a "narrow margin of safety." A deficiency of some essential amino-acid or acids is thereby prevented. This is in harmony with the recent report of a committee of inquiry regarding the prevalence of pellagra among Turkish prisoners of war in Egypt, which denies evidence of special infection in pellagra and ascribes it to a deficiency in protein, as gaged by its biologic value.

Goldberger's review admits, further, that the diets of the pellagrous households have a smaller average supply of the recognized vitamins than do those of the nonpellagrous, the disparity in supply being particularly marked with respect to the fat-soluble A factor. Furthermore, the mineral make-up of the diets of the nonpellagrous households will tend to be superior to that of the pellagrous households, or, at least, it is less likely to be deficient either as a whole or in any

1. Goldberger, Joseph: The Etiology of Pellagra, Pub. Health Rep. **29**: 1683, 1914.

2. Goldberger, Joseph: Pellagra—Causation and a Method of Prevention, J. A. M. A. **66**: 471 (Feb. 12) 1916. Goldberger, Joseph; Waring, C. H., and Willets, D. G.: The Prevention of Pellagra, Pub. Health Rep. **30**: 3117, 1915. Goldberger, Joseph, and Wheeler, G. A.: Experimental Pellagra in the Human Subject, ibid. **30**: 3336, 1915; The Experimental Production of Pellagra in the Human Subject by Means of Diet, Bull. 121, Hyg. Lab., U. S. P. H. S., February, 1920. Goldberger, Joseph; Wheeler, G. A., and Sydenstricker, Edgar: A Study of the Diet of Nonpellagrous and of Pellagrous Households, J. A. M. A. **71**: 944 (Sept. 21) 1918.

3. Goldberger, Joseph; Wheeler, G. A., and Sydenstricker, Edgar: A Study of the Relation of Diet to Pellagra Incidence in Seven Textile-Mill Communities of South Carolina in 1916, Pub. Health Rep. **35**: 648 (March 19) 1920.

of its elements. There is considerable evidence that a lack of the so-called water-soluble or antineuritic vitamin is not the foremost dietary defect in the genesis of pellagra, if, indeed, it is of any significance whatever. Milk, and to a lesser degree meat, may remedy the inorganic deficiency, if any exists. It is not irrational to suspect a possible concurrence of conditions facilitating dietary deficiencies of more than one sort. As stated in *Public Health Reports*, the somewhat lower plane of supply, both of potential energy and of protein, in the diets of the pellagrous households, though apparently not an essential factor, may, nevertheless, be contributory by favoring the occurrence of a deficiency in intake of some one or more of the essential dietary factors, particularly with diets having only a narrow margin of safety.

Further research is almost certain to discover more specifically the precise shortcomings in the food supply which are responsible for pellagrous symptoms. In the affected regions of the South, however, it seems clear that an increase in the availability of milk—perhaps by increasing cow ownership, as Goldberger and his colleagues propose—and of fresh meat by all-year-round meat markets at present represents the important practical measure to prevent and control pellagra.

THE FUMES OF IODIN

One of the important factors connected with therapeutics as a science is the method of administration of medicinal substances. Drugs may be given by mouth, by hypodermic or intravenous injection, by inhalation, by inunction or, less frequently, by the use of other entrances into the body. In choosing a method, the physical characters of the substance to be administered and the immediate effects of the substance on the body tissues with which it may come in contact must be especially taken into consideration.

These factors apply particularly in the case of substances like iodin, arsenic, mercury or the biologic products in which the mode of administration radically modifies the action. For some time manufacturers have urged substitutes for tincture of iodin, claiming that their substitutes were free from the undesirable properties of the tincture, and, at the same time, possessed special virtues which the tincture could not possess. More recently, attention has been directed to the administration of iodin in the form of vapor. The diffusing and penetrating powers of gases have particularly attracted the attention of therapeutists, since by this method drugs may be applied to rather inaccessible portions of the body, such as the lining of the lungs, the throat and the mucous membranes of the genito-urinary tract. Furthermore, it has been asserted that iodin in the form of fumes has increased combining powers, and is thus far more potent in effect than iodin administered by any other route. There do not seem to have been any adequate scientific investigations of the subject, however, until the recently published results of Luckhardt and his collaborators [1] at the University of Chicago. In their experiments, both on man and on animals, accurately determined quantities of iodin were vaporized in a special device, and the fumes applied to the skin. At the same time, the tincture was applied to the skin of other persons as a control. Iodin was also applied to the skin of dogs with hyperplastic thyroid glands, and the effects on the gland, before and after administration, studied. Dogs were also used to determine whether iodin fumes were absorbed from the lungs. As a result of these investigations, which are reported in great detail, it was found that iodin, when deposited on the skin in the form of fumes, is absorbed. More iodin was recovered from the urine, following the application of the tincture, than was recovered following the use of the fumes. This result is explained by the authors on the ground that probably more iodin was actually applied, and that the iodin so deposited was held in combination with the protein during the process of coagulation of the latter by the alcohol of the tincture, leading to a state of continuous absorption. It is probable, furthermore, that the iodin deposited on the skin in the form of fumes is revaporized to some extent by the heat of the body.

Most important were the effects of iodin administered intratracheally in the form of fumes. Iodin given in this way seems to be rapidly and completely absorbed; but it was found that the administration of the fumes of iodin by inhalation through the respiratory passages, even in small quantities, is fraught with great danger. Such administration induces dyspnea; and when it is given in large quantities, acute and fatal pulmonary edema ensues within twenty-four hours. When respiratory disorders are present at the time of administration, the fatal edema supervenes very quickly. Thus far, no device designed to deliver fumes controls the dosage.

It is interesting to consider, as do the authors, the fact that the fumes of iodin have the same effect as those of two other halogens, bromin and chlorin. The results of these experiments with iodin fumes on the dog, as shown by necropsy findings, are practically identical with those reported by military surgeons as found in soldiers gassed with chlorin during the war.

The results of these researches are additional evidence as to how scientific research may confirm or deny conclusions based on empiric therapeutic observations. The work may well serve as a model for similar experiments, now being made, on the therapeutic use, intravenously, of such substances as nonspecific proteins or organic preparations of toxic drugs. The patient should at least have the chance that is afforded him by preliminary experiments, scientifically performed on animals in the research laboratory.

1. Luckhardt, A. B.; Koch, F. C.; Schroeder, W. F., and Weiland, A. H.: The Physiological Action of Fumes of Iodin, J. Pharmacol. & Exper. Therap. **15**: 1 (March) 1920.

FACTORS IN AVERTING BACTERIAL INVASION THROUGH THE UPPER AIR PASSAGES

The upper air passages, including the mouth and nose, form an important portal of entry for micro-organisms into the body. The protection of the body against the dangerous invaders is varied in type. The blood may contain components which have a germicidal character or render innocuous the toxic products of bacterial growths. Long before the bacteria have an opportunity to reach the circulation, however, they may be inhibited in growth or destroyed. Thus, as we have pointed out,[1] the nasal mucosa may sometimes function to prevent infection from the virus of poliomyelitis. In the dissemination of the hemolytic streptococci which are so commonly present in the throat and tonsils, they may find their way into the alimentary canal; indeed, there is reason to suppose that they are constantly passing beyond the pharynx in large numbers. Yet so long as a potent gastric secretion is available, this type of micro-organism fails to pass beyond the stomach.[2]

As an illustration of the opposition offered by the mouth and its secretion to the free development of certain micro-organisms that have found entrance orally into the body, investigations by Bloomfield[3] at the Johns Hopkins Hospital may be cited. He swabbed *Sarcina lutea*, a species nonparasitic and nonpathogenic for human beings, in large amounts on the tongue or nasal septum, or introduced it into the tonsillar crypts. Within a short time, usually from one to two hours, the micro-organisms could no longer be recovered there. Bloomfield introduced such large numbers of *Sarcina*, in proportions vastly greater than would be brought in by any natural mode of infection, that their rapid disappearance attests the remarkable efficiency of the mechanism present in the upper air passages for disposing of at least the particular organism mentioned. His analysis of the possible factors active in effecting this disposal indicated that the reaction of mouth secretions, mechanical action and other mouth bacteria play little if any part, but that the saliva and mouth secretions exert a prompt and marked bactericidal effect.

That different bacteria may be disposed of in quite unlike manner is further indicated by Bloomfield's latest studies of the fate of *B. coli* and *Staphylococcus albus*. In contrast with *Sarcina*, these are parasitic in human beings; and though usually nonpathogenic, they may at times produce disease. When they were swabbed on the tongue or nasal septum they usually disappeared within twenty-four hours; but when they were introduced into tonsillar crypts they could still be recovered after somewhat longer intervals. In no case was a permanent carrier state set up. In explanation of the disappearance of *B. coli* and *Staphylococcus albus*, it seems unlikely that the mouth secretions play the part of the destructive or inhibitive agent. Since, however, inert particles placed in the upper air passages also disappeared at about the same speed as the bacteria, it is probable that mechanical influences are here involved; that is, "the organisms probably disappear because they are mechanically removed more rapidly than they multiply."

Evidently, then, protection must no longer be thought of as constant or uniform in character. Different species or types of micro-organisms may be disposed of in quite unlike ways in the upper air passages. The mouth secretions, the normal mechanical flushing processes in the mouth, nose and lacrimal passages, the unexplained potencies of the mucosa, the gastric juice, have all been demonstrated to take part in certain cases. What other mechanisms, if any, may aid in removing invading bacteria remains to be seen.

1. Protection Against Poliomyelitis, editorial, J. A. M. A. **74**: 952 (April 3) 1920.
2. Alimentary Protection Against Hemolytic Streptococci, editorial, J. A. M. A. **74**: 1260 (May 1) 1920.
3. Bloomfield, A. L.: Bull. Johns Hopkins Hosp. **30**: 317 (Nov.) 1919; The Fate of Bacteria Introduced into the Upper Air Passages, Am. Rev. Tuberc. **3**: 553 (Nov.) 1919.

FACTS AND FICTIONS REGARDING TUBERCULOSIS

Now and then the public press stirs up the people to the possible menace to health which some of our habits may entail. If the warnings are justified on the basis of evidence, they must be welcomed. At the present time the public is particularly receptive to the lessons of science. The war demonstrated that science is a potent factor in life and in the world's work. The scientist must therefore be on his guard lest fiction creep in where facts are wanted; in other words, in order to retain a respectful hearing he must seek to prevent unfounded statements and half-baked theories from gaining recognition.

Recently the danger of kissing has been heralded anew in connection with tuberculosis. Although Richard Cabot[1] has warned the layman that osculation might well be dispensed with, the practice has not yet been abandoned. Hence it may be worth while to refer to the latest bacteriologic facts established by convincing methods.[2] Patients with tubercle bacilli in the sputum and saliva kissed sterile Petri dishes at different times in the day. Viable tubercle bacilli were demonstrated to be present at certain times in the day, though by no means always. Soon after coughing, the danger of transmission by kissing seems to be particularly marked. The possibility of transference of the micro-organism of tuberculosis to eating utensils, and thence if not cleansed to a second person, has likewise been borne out. On the other hand, the studies of the experts at the Trudeau Sanatorium[2] suggest

1. Cabot, R. C.: What Men Live By, Boston, Houghton Mifflin Company, 1914.
2. Brown, Lawrason; Petroff, S. A., and Pesquero, Gilberto: Etiological Studies in Tuberculosis, Am. Rev. Tuberc. **3**: 621 (Dec.) 1919.

that the danger of the dust of rooms in a health resort has not yet been conclusively proved, and their experiments tend to belittle it. The same thing is true of the danger of eating utensils properly cleaned, of sanatorium telephone receivers, of door knobs handled by patients, and similar possibilities. Undue prejudice against the tuberculous would be a misfortune.

To the problem of laboratory diagnosis and prognosis of tuberculosis the Trudeau laboratories have also lately made contributions.[3] It is pointed out that the number of tubercle bacilli present in a specimen as judged by the rough methods of examination usually employed does not give any definite information regarding pathologic activity that their mere presence does not afford. The same thing is true of such morphologic features as short bacilli, even in clumps. Much's granules and the presence of tubercle bacilli within certain cells in the sputum are likewise regarded as of no especial importance for the determination of pathologic activity, though elastic fibers in the sputum always are. Tubercle bacilli in the stools of adults have at least the same significance in respect to pathologic activity as when they occur in the urine. Of doubtful or negative value are various urine tests, namely, the diazo, urochromogen or methylene blue reactions. The mere figures of red and white blood cells are likewise without import.

Current Comment

THE MACROPHAGES IN BRAIN REPAIR

The rôle of the phagocytic cells that have of late been designated as macrophages, in some of the processes involving the repair and regeneration of injured bone, has recently been referred to in THE JOURNAL.[4] By the preliminary use of so-called vital stains such as trypan blue and other azo dyes of the benzidin series—pigmentary substances which these phagocytic cells engulf and store with avidity—the location of the macrophages in various parts of the organism has become easier. Thus, Macklin[5] found the dye-containing cells abundant in tissues immediately surrounding bone fractures. He concluded that "their mobilization in this region was for the purpose of assisting in the removal of the waste material, the result of the injury." This type of response in damaged and inflamed tissues is not dependent on the presence of bacteria. The attraction of cells with potent phagocytic power is not due to the chemotropism of microorganisms. It occurs in aseptic tissues and in widely different parts of the body. Thus, what is true in the case of bone repair has been duplicated in instances of brain traumatism in recent researches of the Macklins.[6] When lesions occur in the cerebral nervous substances the defunct tissue is rapidly absorbed, and this is accomplished by a temporary cellular mechanism, made up of young blood vessels, phagocytes and connective tissue—in fact, a granulation tissue. Fully developed macrophages soon begin their activity, and remain in such healing lesions for long periods. The dye-stained phagocytes may ingest considerable lipoid material in the injured spots, and sometimes entire blood corpuscles are engulfed. According to Macklin, the macrophages seem to multiply by mitosis at the site of injury rather than to be transformed out of lymphocytes. They are apparently also recruited in part from the neuroglia, for hypertrophied neuroglia cells containing dye granules and other material may be found in the area of inflammation. Some also arise from the endothelium of the blood vessels; for endothelial cells in the injured region may become enlarged and filled with foreign material. They then behave like the other macrophages. Whether it is at the border of an infected abscess or in the midst of an aseptic area of defect, the function of the macrophages apparently is to ingest and transfer the products of tissue disintegration. Improved histologic technic has brought these beneficent scavengers into new and deserved prominence.

ORIGIN OF THE ACETONE SUBSTANCES IN THE BODY

The so-called acetone substances—acetone, acetoacetic acid and beta-oxybutyric acid—are excreted by the organism under conditions in which the metabolism, for some reason, is more or less deranged. That they are not derived in this way directly from sugar is made probable by the fact that the acetone substances are most likely to make their appearance when there is carbohydrate starvation; and the output may be checked in certain cases by carbohydrate administration. On the other hand, there is evidence for the belief that the acetone substances may be derived from both fats and proteins. In the case of the latter it is their amino-acid derivatives that are concerned in the ketogenesis. Not all of the amino-acids, however, are capable of contributing to an increased output of acetone substances under the determining conditions. Some of the amino-acids that are able to yield sugar in the organism doubtless may actually have an antiketogenic power. Current ideas as to the seat of formation of the acetone substances, which the clinician has come to look for so commonly in routine diagnostic procedures, have been derived from studies on surviving organs. Perfusion of these with blood containing various ketogenic substances in solution has shown that the liver may act as a place of formation.[7] As experiments on the perfused muscles, kidneys and lungs, respectively, yielded negative results,

3. Brown, Lawrason; Heise, F. H.; Petroff, S. A., and Sampson, H. L.: A Preliminary Study of Clinical Activity, Am. Rev. Tuberc. **3**: 612 (Dec.) 1919.

4. Some Factors in Bone Repair, editorial, **74**: 604 (Feb. 28) 1920.

5. Macklin, C. C.: Bone-Repair in the Rat Vitally Stained with Trypan Blue, Anat. Rec. **14**: 43, 1918; The Development and Function of Macrophages in the Repair of Experimental Bone Wounds in Rats Vitally Stained with Trypan Blue, Publication 272, Carnegie Institution of Washington, Contributions to Embryology, No. 27, p. 1, 1919.

6. Macklin, C. C., and Macklin, M. T.: Study of Brain Repair in the Rat by the Use of Trypan Blue, Arch. Neurol. and Psychiat. **3**: 353 (April) 1920.

7. Embden and Kalberlah: Ueber die Acetonbildung in der Leber, I, Hofmeister Beitr. **8**: 121, 1906. Embden, Salomon and Schmidt: Ueber Acetonbildung in der Leber, Hofmeister Beitr. **8**, 1906. Magnus-Levy: Die Acetonkörper, Ergebn. d. inn. Med. **1**: 352, 1908.

attention has become more directly focused on the liver as the chief organ involved in the perverted metabolism exhibiting ketogenesis. It has been known for some time, in corroboration of the presumable importance of the liver in this function, that the output of acetone substances is lower in dogs bearing an Eck fistula than in normal animals of the same species. This surgical device shunts the portal blood directly into the venous circulation without first passing through the liver, the blood supply of the latter being limited to that of the hepatic artery.[8] Kertess[9] has verified this, particularly under conditions favorable to the exhibition of ketogenesis under the usual circumstances. When, however, a reversed Eck fistula operation was done whereby the blood supply of the vena cava was entirely sent through the liver before it returned to the heart for redistribution, acetonuria was greatly augmented. Hence, the dependence of the intensity of the output of acetone substances on the degree of participation of the liver in the circulation of acetone precursors—of the amino-acid leucin in the experiments of Kertess[9]—places this organ in the forefront of importance as the seat of ketogenesis more emphatically than ever.

THE SHORT AND CATCHY PROPRIETARY NAME

A laborer went to a Brooklyn physician for treatment and was given three prescriptions. One of the prescriptions, according to the *Food and Drug Bulletin* of the Department of Health, City of New York, called for "Laxol," the word being written on a piece of blank paper without directions. The drug clerk misread the prescription and dispensed an "original" bottle of "Lysol" which bore the usual poison label with skull and cross bones. The man drank the entire three ounces of Lysol and died half an hour later. The case is now in the hands of the District Attorney, the drug clerk being held under $10,000 bail. "Laxol," as our readers know, is castor oil sweetened with saccharin and flavored with peppermint. There is no excuse for prescribing the product. The official Aromatic Castor Oil (Ol. Ricin. Arom.) of the National Formulary would answer every purpose served by the proprietary preparation.

A RECIPE FOR OLD AGE

In the memoirs of Baron de Grimm, written between the years 1753 and 1790, appears an account of the death of a member of the French Academy, a physician of eminence, one John J. de Mairen, at the age of 93. "He had arrived at this great age," say the memoirs, "without any infirmity, and preserved his good looks, his activity, as well as the entire use of his faculties to the last moment of his life." Until his last illness he scarcely missed going out a single day; he lived in the best society, dined out almost every day, and passed the afternoon in making visits and the evening among his books. "He was exactly the kind of a person to live to a great age," says de Grimm; "his head was well formed, he had great equanimity of temper, great moderation in his passions, or rather he was destitute of passions; he had sensibility enough to engage the regard of those with whom he associated, and to contract those ties of intimacy which were sufficient for him, which have not indeed the charms of friendship, but which do not draw after them the same obligations. He had not warmth of heart enough to feel the necessity of an attachment which rules despotically; of a friend who disposes of us at pleasure, who forms the happiness or the misery of our lives: he had much prudence and foresight, paid great attention to himself, and was very methodical in whatever he did." Is this a text on geriatrics?

8. Fischler and Kossow: Vorläufige Mitteilung über den Ort der Acetonkörperbildung, Deutsch. Arch. f. klin. Med. **111**: 479, 1913. Kossow: Leber und Acetonkörperbildung, ibid. **112**: 539, 1913.

9. Kertess, E.: Zur Frage des Entstehungsortes und der Entstehungsart der Acetonkörper, Ztschr. f. physiol. Chem. **106**: 258 (July) 1919.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ILLINOIS

Personal.—Dr. Arthur F. Stotts, Galesburg, who was shot, May 8, is reported to be improving slowly.——Dr. Elmer L. Crouch, Jacksonville, has become medical director of the Sanatorium for Nervous and Mental Diseases at Stamford, Conn.

Secretaries' Conference.—The annual meeting of the Secretaries' Conference was held in Rockford, May 18, and Dr. Henry A. Chapin, Jacksonville, was elected president; Dr. Lee O. Frech, White Hall, vice president, and Dr. Thomas D. Doan, Scottsville, secretary (reelected).

Hospital Notes.—The Moultrie County Red Cross and Tuberculosis Association have accepted the offer by W. A. Steele of a cottage in Sullivan to be used for a county hospital.——A site for the McDonough County Tuberculosis Sanitarium has been purchased at Bushnell, the consideration being $2,000. Ground has been broken for a new nurses' home, which is being erected at a cost of $125,000. The plan calls for a three-story brick building which is to be thoroughly modern.

Public Health Nursing Experiment.—The Illinois State Tuberculosis Association and Chicago School of Civics are cooperating in an interesting nursing experiment. Fourteen nurses from the class of public health nursing have been assigned for the month of May to make an extensive health and sickness survey in fourteen counties of the state. By this plan it is hoped to develop a knowledge of the tuberculosis situation and to induce the counties to support permanent public health nurses.

State Chapter of World War Medical Veterans Organized.—More than 100 medical officers who had served during the World War assembled in Rockford, May 19, at the call of Dr. John M. Dodson, Chicago, and organized the Illinois Chapter of the Medical Veterans of the World War, electing Dr. Joseph R. Hollowbush, Rock Island, as vice president for Illinois of the national organization and chairman of the state chapter; Dr. Wilbur H. Gilmore, Mount Vernon, secretary-treasurer, and Drs. Malcolm L. Harris, Chicago, and Samuel M. Wylie, Paxton, councilors.

State Medical Society Meeting.—The seventieth annual meeting of the Illinois State Medical Society was held in Rockford, May 18 to 20, under the presidency of Dr. James W. Van Derslice, Oak Park. On the second day, the president delivered his annual address; Dr. George W. Crile, Cleveland, the oration on surgery, entitled "Surgery of the Gallbladder and Ducts," and Dr. William Engelbach, St. Louis, the oration on medicine, entitled "Disease of the Pituitary Gland." Both of the orations were illustrated by stereopticon views. The following officers were elected: president, Dr. William F. Grinstead, Cairo; president-elect,

Dr. Charles E. Humiston, Chicago; secretary, Dr. Wilbur H. Gilmore, Mount Vernon (reelected); treasurer, Dr. Andrew J. Markley, Belvidere (reelected). Springfield was selected as the place for the next meeting.

Chicago

Joint Meeting.—May 26, the Chicago Medical Society and Chicago Ophthalmological Society held a joint meeting at which Dr. Dwight C. Orcutt read a paper on "The Importance of Early Treatment for Strabismus," and Dr. Richard J. Twinen, one on "Preventable Blindness," illustrated by lantern slides.

Personal.—Dr. Wesley Hamilton Peck, formerly president of the ophthalmologic section of the Illinois State Medical Society, was presented with a silver loving cup at the Rockford meeting, May 19, as an appreciation of his efforts in behalf of the section. Dr. Willis O. Nance made the presentation address.——William Gardner Cottrell, Ph.D., was awarded the tenth William Gibbs Medal at a dinner tendered by the Chicago Section of the American Chemical Society at the City Club, April 21.

INDIANA

New Hospital.—The Northwestern Indiana conference of the Christian church plans to build a hospital on the banks of the Tippecanoe River near Ora. The proposed institution will be maintained by the proceeds from a large endowment fund.

Fraudulent Eye Specialists.—The state board of health has received information from people living in Charlestown, that two men giving their names as Dr. Harper and Dr. Van Camp are touring the country representing themselves as agents of the state board of health, and as eye specialists and carry instruments for testing the eyes of patients, whom they secure in the name of the state board of health. It is said that their practice is for the most part on the eyes of children. According to Dr. John N. Hurty, secretary of the state board of health, neither of the men is a representative of the state board and a warning is issued against them.

IOWA

Personal.—Dr. Peter G. Grimm, Spirit Lake, has been appointed local surgeon of the Chicago, Milwaukee and St. Paul Railway.——Dr. Jeannette F. Throckmorton, Mason City, sailed for Europe, May 1.

Health Center Organized.—On May 12, Sioux City Health Center was formally organized and the building was open for inspection. The principal address was given by Dr. Herman M. Adler, Chicago, state criminologist of Illinois, and the opening day was known as Florence Nightingale Day.

Medical Women Elect Officers.—At the annual meeting of the State Society of Iowa Medical Women, held May 11, Dr. Lena A. Beach, Rockwell City, was elected president; Dr. Jennie M. Coleman, Des Moines, vice president; Dr. Mary K. Heard, Iowa City, secretary, and Dr. Eleanor M. Hutchinson, Des Moines, treasurer.

KANSAS

State Board Appointments.—Drs. William M. Earnest, Washington; Charles H. Ewing, Larned, and Clay E. Coburn, Kansas City, have been appointed to succeed themselves as members of the state board of health, for a period of three years.

State Medical Society Meeting.—The fifty-fourth annual meeting of the Kansas Medical Society was held in Hutchinson, under the presidency of Dr. Elmer E. Liggett, Oswego. Topeka was chosen as the place of next meeting and the following officers were elected: president, Dr. Clemens Lippel, Hutchinson; vice presidents, Drs. John R. Scott, Ottawa (reelected), Jacob L. Everhardy, Leavenworth, and Herbert Randles, White City; secretary, Dr. John F. Hassig, Kansas City (reelected); treasurer, Dr. Lewis H. Munn, Topeka (reelected).

MARYLAND

Gift to Johns Hopkins.—Instead of $2,000,000, the Johns Hopkins University will receive $5,541,401, under the terms of the will of the late Capt. Joseph Raphael de Lamar of New York. According to the terms of the will, the residuary estate is to be divided equally among the medical schools of Harvard, Columbia and Johns Hopkins universities, for the advancement of preventive medicine and the study of dietetics.

State Medical Association's New Officers.—At the annual meeting of the Medical and Chirurgical Faculty of Maryland, held in Baltimore, May 11, 12 and 13, the following officers were elected: Dr. William S. Gardner, Baltimore, president; Drs. James H. Mason Knox, Jr., Baltimore, Arthur H. Hawkins, Cumberland, and Charles F. Davidson, Easton, vice presidents; Dr. Joseph Albert Chatard, Baltimore, secretary, and Dr. Charles E. Brack, Jr., Baltimore, treasurer.

Japanese Physicians Visit Baltimore.—The first of a large contingent of Japanese physicians, professors and students who are leaving shortly for Europe to begin their studies of European methods arrived in Baltimore recently. They are Dr. T. Hayao, assistant professor of medicine, Imperial University of Tokyo; Dr. B. Kure, a graduate of Columbia University, New York; Prof. B. Senju of Tokyo; Dr. C. Ookuni of Osaka, a graduate of Philadelphia and Boston dental colleges, and Dr. Shimade of Tokyo.

Praise for School for Blind.—The Red Cross Institute for the Blind at Evergreen, Baltimore, is the most advanced school for the war blind that has been established by any allied country, in the opinion of Capt. George Delvaux, head of Queen Elizabeth's Institute for the War Blind in Belgium. Captain Delvaux, who is studying methods at Evergreen, has visited schools for civilian and war blind in Italy, France and England. He came to Evergreen at the suggestion of Queen Elizabeth to whom he is directly responsible for the administration of the school for the blind established by her several months ago.

Final Transfer of Soldiers at Fort McHenry Hospital.—The transfer of 219 patients from U. S. Army General Hospital No. 2, Fort McHenry, to the Walter Reed General Hospital at Washington, May 18, marked the closing days of the fort as a United States Army hospital. The detachment, consisting of thirty-one "litter patients" and 188 "sitting patients," were taken to Washington, D. C., on a special hospital train. The patients transferred included twenty-six officers, 191 enlisted men and two civilians, and represented 177 surgical and forty-two medical cases. The U. S. Public Health Service will take over the fort, May 31.

Personal.—Dr. Henry R. Carter, assistant surgeon-general, U. S. P. H. S., has returned to Baltimore after spending two and one-half months with the Rockefeller Foundation party fighting yellow fever in the Piura district of northern Peru. He hopes to return to Peru within a month, if his health permit, to take charge of the work, succeeding Gen. William C. Gorgas, adviser in sanitation for Peru, who has been called to South Africa.——Dr. Robert M. Lewis recently flew from Baltimore to Cambridge, Md., in a hydroplane in response to a request to hurry to the Cambridge Hospital where many surgical cases had accumulated. The trip consumed fifty-five minutes, while by boat it would have taken four hours.——Surg. James A. Nydegger, U. S. P. H. S., on duty at Baltimore has been transferred to Quebec for duty, and after a thirty-day leave of absence, will assume his new duties. Senior Surg. Thomas R. Payne will come to Baltimore to take charge of the hospital and other public health matters in this city.

MASSACHUSETTS

Healer Sentenced to Imprisonment.—"Prof." Fred Laplante, Worcester, on May 3, is said to have been sentenced to the house of correction for a term of six months on three charges of larceny, all three sentences to run concurrently. Three other charges alleging practice of medicine without a certificate or registration were placed on file.

Qualification Vaccination of All Schoolchildren.—The Somerville Medical Society has placed itself on record as advocating without qualification vaccination of all schoolchildren as a protection to the community against the ravages of smallpox, and as expressing its condemnation of Senator Joseph O. Knox, Somerville, who allowed his personal feelings to influence him on public measures, as a betrayer of public trust. The bill extending the law regarding the vaccination of children of public schools to children who attend private schools was defeated. Senator Knox is said to have been active in the defeat of this bill and also in the support of a bill to repeal the existing laws regarding vaccination.

Personal.—Dr. Robert B. Greenough, Boston, has accepted the chairmanship of the New England Committee on the Control of Cancer, and has already taken steps to effect a district organization.——William J. Brickley, Boston, has

been appointed medical examiner (coroner) for Sussex County succeeding Dr. Oscar Richardson, Boston, resigned. ——Dr. Theobald Smith has been given the M. Douglas Flattery medal and $500 in gold by the Harvard corporation. The reason of the award is given as follows: "Theobald Smith, working on Texas fever in cattle, demonstrated for the first time that the micro-organism of an infectious disease could be transmitted through the agency of an invertebrate host."——Dr. Milton J. Rosenau has been elected to the Charles Wilder professorship in preventive medicine and hygiene, founded by Charles Wilder and Miss T. E. Wilder, Cambridge.

Report of Communicable Diseases.—The department of public health has sent an appeal to the physicians of the state calling attention to the fact that a few physicians have failed conspicuously to fulfil their obligations regarding the reporting of communicable disease. For this reason the division of registration in medicine of the department of civil service and registration and the department of public health are cooperating in the following manner: Names of physicians who do not report cases of diseases dangerous to the public health to their local boards of health shall be furnished to the department of public health. The department of public health will present to the division of registration in medicine of the department of civil service and registration these names with the proper evidence of neglect to report such diseases. Where it is positively known that the physicians persistently neglect and refuse to report such diseases, a hearing will be granted by the division of registration in medicine of the department of civil service and registration to the offending physician, giving him the opportunity to show why his license to practice medicine should not be suspended.

MICHIGAN

Society Organized.—At the meeting of the physicians of the medical societies of Antrim, Charlevoix, Emmet, Grand Traverse, Leelanau and Wexford counties held in Charlevoix, the Northwestern Michigan Medical Society was organized with the following officers: president, Dr. Robert B. Armstrong, Charlevoix; vice president, Dr. George W. Fralick, Maple City, and secretary-treasurer, Dr. Buell H. Van Leuven, Petoskey. Arrangements were made to hold a clinic in Petoskey in September and another at Cadillac later in the year.

MISSISSIPPI

Personal.—Dr. Theodore P. Barnes has been elected superintendent of the state colony for feebleminded.——Dr. Hiram Byrd, director of the department of hygiene of the University of Mississippi, has resigned to accept the position of director of the department of hygiene of the University of Alabama. ——Dr. Francis M. Sheppard, Richton, has been appointed assistant superintendent of the Mississippi State Charity Hospital, Jackson.

New State Officers.—At the thirty-third annual meeting of the Mississippi State Medical Association held in Jackson, May 11 and 12, under the presidency of Dr. Felix J. Underwood, Aberdeen, Laurel was chosen as the next place of meeting, and the following officers were elected: president, Dr. John W. Barksdale, Winona; vice presidents, Drs. Horace H. Kinney, Okolona, William A. Johns, Corinth, and Lawrence B. Hudson, Hattiesburg; Dr. Thomas M. Dye, Clarksdale, secretary (reelected), and Dr. James M. Buchanan, Meridian, treasurer (reelected). The annual address was delivered by Dr. Seale Harris, Birmingham, Ala., on "Food Poisoning."

MISSOURI

Health Officers to Meet.—The week from June 14 to 19, inclusive, has been designated as public health week, and at this time the first formal conference of health officers ever held in the state will convene under the auspices of the University of Missouri School of Medicine and the state board of health.

New Officers.—At the annual meeting of the Southeastern Missouri Medical Association held in Farmington, Dr. Warren C. Patton, Cape Girardeau, was elected president; Dr. John A. Van Amburgh, Burfordville, vice president; Dr. Elam J. Nienstedt, Blodgett, recording secretary; Dr. William S. Hutton, Fornfelt, corresponding secretary, and Dr. William R. Goodykoontz, Caledonia, treasurer.

Occupational Therapy School.—A school for occupational therapy has been opened in the City Hospital at St. Louis under the direction of the Missouri Association for Occupational Therapy. A large room has been assigned for the workshop, fitted up with work benches and work tables some of which are specially designed for patients in wheel chairs. Miss Cora Ault is superintendent of occupational therapy for the hospital, and with two assistants teaches handicrafts to the patients. Similar schools have been in operation for some time in the City Sanatorium and the Barnes Hospital.

NEW JERSEY

"Christian Scientist" Fined.—Andrew Walker, a "Christian scientist" of Bloomfield, is said to have been convicted of manslaughter in connection with the death from diphtheria of his 9 year old daughter and sentenced, on May 10, to pay a fine of $1,000. Walker failed to summon a physician and had the child treated by three Christian science practitioners.

Progressive Legislation.—During the present session of the New Jersey legislature, four bills of interest to physicians have been considered. Two of these providing for delaying the issuance of marriage licenses to sufferers from venereal disease have already been passed unanimously by both houses. The other two deal with the reporting by physicians of syphilis and gonorrhea and are drawn to provide state laws conforming to federal recommendations on the subject.

NEW YORK

New Public Health Centers.—Public health centers, including tuberculosis, venereal disease and dental clinics, and a child welfare station have been established at Olean, Geneva and Fredonia.

Bill for Purchase of Radium.—There is at present before the New York State Legislature a bill known as "a bill appropriating $250,000 for the state institute for the study of malignant disease, for the purchase and use of radium," introduced by Senator Gibbs and Assemblyman Seelbach on behalf of Dr. Harvey R. Gaylord, director of the state institute, Buffalo.

Amendment of Law Governing Employment of Town Physicians.—The law relating to the employment of town physicians has been amended by an act of legislature so that a town may now combine with an adjoining town in the employment of a town physician who may reside in either of the two places. The amended law strikes out the clause limiting residence within a radius of 8 miles of the town boundary, and also the one limiting the salary to $1,000 per annum.

Governor Urged to Veto Chiropractic Bill.—The board of managers of the state charities aid association has passed resolutions urging the governor to withhold his approval of the bill recently passed by the legislature to "define and regulate the practice of chiropractic" on the ground that approval of the bill would constitute a real and serious danger to the health of the people of the state by giving public recognition and official license to persons claiming to be able "to locate and adjust by hands misplaced or displaced vertebrae of the human spine for the purpose of relieving the nerve pressure caused thereby." This recognition and license, it is held, would be interpreted by large numbers of people as being equivalent to the giving of authority to practice medicine.

Endorsement of Health Center Plan by Dental Society.—The New York State Dental Society, at its recent meeting in Albany, unanimously adopted a resolution approving the provisions of the health center bill which was introduced into the last legislature by Senator Sage and Assemblyman Machold. The resolutions lay particular stress on the great need for provision for proper care of the mouth and teeth of the rural population, and for instruction in the disastrous physical results of neglect to provide such measures. These resolutions provide for the appointment of a committee from the State Dental Association for the purpose of cooperating with other organizations concerned with or interested in the public health of the state, with a view of securing favorable action on the health center bill at the next session of the legislature.

Typhoid Death Rate Decreases.—During 1919, the typhoid fever death rate in this state decreased to the lowest figure yet recorded, namely, 3.3 per hundred thousand. In 1906, the rate was 19 per hundred thousand. In commenting on these figures, a recent bulletin of the New York State Department of Health compares the condition of the water supplies of the state in 1906 with that of the present time. In 1906, there were about 400 public water supplies which served a population of about 6,100,000. Nearly fifty of these sup-

plies received some purification and served a population of about 700,000. In 1919, there were 510 public water supplies serving a total population of about 8,700,000. Of these water supplies 125 were purified either by filtration, chlorination or both, and served a population of approximately 7,000,000. In other words, the number of people receiving pure water increased 1,000 per cent. during this period.

Intensive Course in Syphilis. — Two intensive courses in syphilis under the auspices of the Rochester Health Bureau will be held in the state hospital and the general hospitals and dispensaries, June 14 to 19 and June 21 to 26, inclusive. They will be in charge of Dr. George W. Goler, health officer of Rochester. The courses include: first, the history and municipal control of syphilis, and second, clinical lectures and demonstrations of, and participation in darkfield work with the living treponema; the technic of Wassermann tests and reactions; the preparation of arsphenamin, technic of its administration in the arm, femoral, jugular and scalp veins, and the superior longitudinal sinus; methods of giving mercury; spinal punctures, and cytology and chemistry of spinal fluid. The course will be free. Each course is limited to fifteen students, and applications must be sent in to the Health Bureau, Chestnut and James Streets, Rochester, for the first course before June 12, and for the second course, before June 19.

New York City

Endowment Fund Increased.—The president of the New York Post-Graduate Medical School and Hospital announces that up to May 20, $1,264,801.57 had been subscribed toward the $2,000,000 endowment fund of the institution.

Flatbush Society Election.—At the annual meeting of the Flatbush Medical Society held in Brooklyn, May 12, Dr. Harold A. Morris was elected president; Dr. Richard M. Mills, vice president; Dr. William F. C. Steinbugler, secretary, and Dr. George A. Merrill, treasurer.

Fund in Memory of Dr. Cragin.—The trustees of Columbia University announce that former patients of the late Dr. Edwin B. Cragin have raised a fund of $3,500 in his memory to be used in social service work at the Sloane Hospital for Women. They also announce a scholarship in the College of Physicians and Surgeons through a gift of $6,000, by Wallis S. Turner in memory of his father, Charles W. Turner.

New Officers. — At the annual meeting of the Women's Medical Association of New York City, held May 19, under the presidency of Dr. Emily Dunning Barringer, the following officers were elected: president, Dr. Ethel D. Brown; vice presidents, Drs. Eleanor Parry and Mary Alice Asserson; corresponding secretary, Dr. Isabel Taylor MacMillan (reelected); recording secretary, Dr. Frances Cohen, and treasurer, Dr. Allis E. Hascall (reelected).

Reeducation of Hospital Patients.—An effort to reeducate a group of women who remain for a considerable time in hospital wards because of venereal disease is being carried on at the Kingston Avenue Hospital, Brooklyn. The New York City Visiting Committee in cooperation with Mrs. Wilcox of the board of education and Miss Marshall of the Manhattan School Board has sent a well-trained teacher to these women. A similar class has been carried on at the city hospital with excellent results.

Personal.—Dr. William T. Doran has received $15,000 in settlement of a bequest of $25,000 under the will of Margaret A. Howard, which was contested by other heirs.—— Dr. Adolphus Monae-Lesser has received a bequest of $80,000 under the will of Joseph Auditore. It is reported that the will will be contested.——Dr. John M. Wheeler was elected secretary of the board of surgeons of the New York Eye and Ear Infirmary, May 18.——Dr. Harry Feldman, Brooklyn, has been appointed assistant to the chief surgeon of the Greenpoint Hospital.——Dr. Israel S. Wechsler has been appointed adjunct in neurology in Mount Sinai Hospital, New York City.——Dr. John A. Ferguson, Brooklyn, has been appointed a member of the board of education of New York City.

First Aid to the Industrial Worker.—The Bureau of Public Health Education of the Department of Health in the City of New York has issued Keep Well Leaflet No. 19, entitled "First Aid to the Industrial Worker," prepared by Dr. Samuel Dana Hubbard, superintendent of the division of industrial hygiene. About 350,000 industrial injuries are reported each year in New York state, the majority of which are in New York City, and in about 15 per cent. of these, infections have increased the serious nature of the injury. This percentage would have been reduced materially by proper application of first aid. The leaflet first considers why overhauling the human machine is necessary, gives rules for the avoidance of accidents, suggestions for first aid, information for the employer, and then devotes sixteen pages to concise and well-considered instructions to laymen for first-aid treatment of common injuries and disorders, advising the laymen what to do and what not to do.

OKLAHOMA

New Hospital. — The Southern Baptist Convention has under construction a new fifty-bed hospital at Cushing. This hospital will care for a large district in the oil field section of the state.

Personal. — Dr. Finis W. Ewing, Muskogee, has been appointed superintendent of health for Muskogee and Muskogee County.——Dr. Virgil Berry, Okmulgee, announces his retirement after more than thirty years of practice.

Medical Society Notes.—An organization known as the Oil Field Medical Association has recently been organized in Oklahoma, its membership includes all the active medical men of Cushing, Yale, Oilton, Quay, Shamrock and Drumright. Dr. William J. Neal, Drumright, is president, and Dr. J. Walter Hough, Jr., Cushing, secretary-treasurer.—— At the meeting of the Logan County Medical Society held in Guthrie, April 22, Dr. Pauline Q. Barker was elected president.——At the annual meeting of the Quay County Medical Association held in Parker City, Dr. James C. Hawkins, Blackwell, was elected president, and Dr. William A. T. Robertson, Ponca City, vice president.

PENNSYLVANIA

Commission to Revise State Laws Named.—On the commission to revise and codify the laws relative to the insane and the feebleminded were named Judge Isaac Johnson, Media, chairman of the state board of public charities; Dr. Theodore Diller, Pittsburgh, Drs. Owen Copp and Charles H. Frazier, Philadelphia, and C. Herr, Harrisburg.

Barber Shop Inspection.—Medical inspection of barber shops in the central part of the city was started, May 19, under the direction of the health department and the survey is to extend to barber shops all over the city. After inspections are completed, Dr. Furbush, director of public health and charities, will issue certificates to each barber shop found in a sanitary condition. A centralized medical clinic where all barber journeymen will be examined is one of the chief things for the future, according to Dr. Furbush. While there is no ordinance to supervise the work there are enough health laws to compel barber shops to clean up. The inspection was started through the request of proprietors of large barber shops who desired a certificate for their places.

Personal.—Dr. Iden M. Porster, Greensberg, has resigned as a member of the state board of health.——Dr. Joseph J. Meyer, Johnstown, has been appointed chief of the genito-urinary dispensary at Johnstown.——Dr. Patrick H. Weeks, Warren, has been appointed physician to the Northern Indiana Penitentiary, Michigan City.——Dr. Hugh J. Coll, Connellsville, has been elected local surgeon of the Baltimore and Ohio Railway, succeeding Dr. Elliott B. Edie, resigned.——Dr. Frank D. Glenn, Erie, who was a member of the Montour County Medical Society in 1912, has returned to the State Hospital for the Insane at Danville, as a member of the staff.——Dr. G. Roberta Fleagle, Hanover, will soon leave for Colgan, China, as a medical missionary under the Methodist board. She will have charge of hospital work, paying particular attention to diseases of women and children, and will be the only woman physician among 125,000 Chinese people.——Dr. Roland Jessop, York, assistant county medical director of York County, has resigned.

WEST VIRGINIA

Personal.—Dr. Frank Lemoyne Hupp, Wheeling, has accepted the chairmanship of the West Virginia Cancer Committee and has appointed the following division chairmen: Drs. John E. Cannady, Charleston division; Wade H. St. Clair, Bluefield division; Chester R. Ogden, Clarksburg division; William W. Golden, Elkins division; Carter S. Fleming, Fairmount division; J. Ross Hunter, Huntington division; Charles S. Hoffman, Keyser division; John N. Simpson, Morgantown division; J. Howard Anderson, Marytown division, and Mary V. McCune Rossa, Martinsburg division.

WISCONSIN

Hospital Enlarged.—Plans are completed which will double the size of the Deaconess Hospital, Green Bay. A new unit is to be built which will give the hospital a capacity of 120 beds.——Dr. Daniel W. Lynch has reopened his hospital at West Bend which he closed when he went into military service.

Resign from Medical Faculty.—Ten members are reported to have resigned from the faculty of the Marquette University School of Medicine on account of a disagreement between them and the president of Marquette University over several ethical questions, one of which is that of sacrificing an unborn infant when necessary to save the life of the mother. Those who have resigned are:

Drs. Louis M. Warfield, Professor of Clinical Medicine; John L. Yates, Professor of Clinical Surgery; Emerson A. Fletcher, Director and Professor of Genito-Urinary Surgery; Carl Henry Davis, Associate Professor of Obstetrics and Gynecology; Chester M. Echols, Associate Professor of Obstetrics and Gynecology; Frederick J. Gaenslen, Director and Associate Professor of Orthopedic Surgery; James D. Madison, Associate Professor of Medicine; Arthur J. Patek, Associate Professor of Medicine; Arthur W. Rogers, Associate Professor of Neurology; Charles H. Stoddard, Associate Professor of Medicine.

CANADA

Personal.—Sir Adam Beck was elected president of the London Health Association, April 10, after a ninth term.——Dr. Ira De La Matter, Mono Road Station, Ont., was presented with the Royal Humane Society Medal at the reception of the returned soldiers of the County of Hastings. Dr. De La Matter saved two persons from drowning in the Trent Canal.——Dr. Edgar C. Barnes, assistant superintendent of the Homewood Sanitarium, Guelph, has been appointed medical superintendent of the Hospital for Mental Diseases, Selkirk, Manitoba.

GENERAL

Thoracic Surgeons Hold Meeting.—At the third annual meeting of the American Association of Thoracic Surgeons held in New Orleans, May 1, Dr. Rudolph Matas, New Orleans, was elected president; Dr. Walton Martin, New York City, vice president, and Dr. Nathan W. Green, New York City, secretary-treasurer.

American Physicians' Association Election.—At the annual meeting of the Association of American Physicians held in Atlantic City, N. J., May 4 and 5, Dr. William S. Thayer, Baltimore, was elected president; Dr. Herbert C. Moffitt, San Francisco, vice president; Dr. Thomas McCrae, Philadelphia, secretary; Dr. Thomas R. Boggs, Baltimore, recorder, and Dr. Joseph A. Capps, Chicago, treasurer.

Coming Meetings.—The thirty-seventh annual meeting of the American Climatological and Clinical Association will be held in Philadelphia, June 17 to 19, under the presidency of Dr. Lawrason Brown, Saranac Lake, N. Y., with headquarters at the Bellevue-Stratford Hotel.——The thirty-second annual meeting of the American Pediatric Society will be held at the Moraine Hotel, Highland Park, Ill., May 31 to June 2, under the presidency of Dr. Thomas S. Southworth, New York City.

Conference of Health Authorities.—The eighteenth annual conference of state and territorial health authorities was held in Washington, D. C., on May 26 and 27. This conference was called at the instance of Dr. Hugh Cumming, Surgeon-General of the Public Health Service. A program for the two days' conference included discussions on "Rural Sanitation," "Public Health Administration," "Endemic Index and Communicable Disease Control," "Better Morbidity Reports," "Initiation of a Nation-Wide Health Campaign," "Coordination of Effort and Promotion of Efficiency in Field of Sanitary Engineering," "Framing of a National and State Policy for the Production of Clean Milk in Adequate Quantities," "Migration of Tuberculous Persons," "Provisions for Lepers," "Child Hygiene," and "Malaria."

Home Economics Association.—The thirteenth annual meeting of the American Home Economics Association will be held at Colorado Springs, Colo., June 24 to 29, inclusive, with headquarters at the Antlers Hotel, under the presidency of Edna N. White of Detroit. The science section, which is naturally of most interest to physicians, holds its sessions on June 28, when papers will be presented by Mrs. Agnes Fay Morgan of the University of California, on "The Contribution of European Experience on Low Diets to Our Teaching of Dietetics," and by Helen R. Thompson of the Kansas Agricultural College, on "Effect on Young of Alternate Periods of Suppression of Growth and Refeeding: Experimental Data on Albino Mouse," and by Major David Klein, Chicago, on "Scientific Preparation of Gland Extracts and Their Use in Feeding in Cases of Malnutrition."

Senate Committee Restore Appropriation to Combat Venereal Diseases.—Fears entertained by physicians and social workers that the national government's campaign against venereal diseases would be stopped because of lack of funds will be allayed by the action of the Senate Committee on Appropriations. This committee has restored to the Sundry Civil Bill appropriations amounting to $785,000 which were heretofore stricken out of that bill on the floor of the House of Representatives. Within the past week Senators have received hundreds of telegrams and letters from mayors of cities, church federations, officials of the Y. M. C. A. and city health authorities approving of the splendid work accomplished by the Bureau of Venereal Diseases of the national government and asserting that it would be a national calamity if this salutary work were not continued.

Anesthetists Meet.—At the annual meeting of the American Association of Anesthetists held in New Orleans, last month, resolutions were adopted that the association place itself on record as unalterably opposed to the employment of lay anesthetists, nurse anesthetists, who have not been graduated from recognized medical and dental colleges and have not been licensed to practice medicine or dentistry; and agree to inaugurate and prosecute legislation to protect the medical and dental professions and the public from such inadequately educated and trained anesthetists whenever such action is necessary and pledged its cooperation with the government in securing specialists in several branches of medicine in the medical department of the Navy and the medical department of the Army. The following officers were elected: president, Dr. Joseph E. Lumbard, New York City; vice presidents, Drs. Frank L. Richardson, Boston, and Eleanor C. Seymour, Los Angeles, and secretary-treasurer, Dr. F. Hoeffer McMechan, Avon Lake, Ohio.

Bequests and Donations.—The following bequests and donations have recently been announced:

Cambridge, Mass., Hospital, a bequest of $70,000 by the will of Mrs. James A. Wollson.

Children's Home Society, Jackson, Miss., for the erection of an annex for housing children having contagious or communicable diseases, a donation of $10,000, by Mrs. S. W. Johnson.

Home for Incurables, Philadelphia, $10,000, Methodist Hospital, $5,000 and Frankfort Hospital, $500, by the will of Mary Anne Elliott.

Episcopal Hospital, Philadelphia, $500, by the will of Florence W. Holbrook.

Lankenau Hospital, Philadelphia, $5,000, by the will of Gustav A. Schwartz.

St. Vincent's Home, Maternity Hospital, Philadelphia, and one other institution, $4,000, by the will of Michael Corrigan.

Children's Home, York, Pa., York Hospital and Tressler's Home, York, each $1,000, and Society to Protect Children and Aged Persons, $500, by the will of Miss Amanda Smyser, York, Pa.

Servants' Relief and Incurable Cancer, New York City, $1,000, by the will of Ann Hogan.

For a new hospital at Denison University, Newark, Ohio, a donation of $25,000, by Mrs. F. C. Whistler, Hillsboro.

Association for Research in Nervous and Mental Diseases.—On the initiative of the New York Neurological Society, an association has been organized to foster research in neuropsychiatric diseases. Meetings are to be held yearly. At each meeting only one subject will be discussed. The meetings will be conducted by a commission whose members will act as an investigating body on the presentations and theses submitted at each annual meeting; and at the conclusion of the meeting the commission will prepare and publish such material as it deems fit. Subjects will be given out from one to three years in advance of the meeting. The commission has decided on New York for the first meeting late in December, 1920. The subject for discussion is "The Acute Nonsuppurative Infections of the Nervous System." Each member is to pay a fee of $5 yearly to the secretary-treasurer of his local neurologic society, who will transmit all funds to the secretary-treasurer of the research association, Dr. Foster Kennedy. The neurologic societies of Baltimore, Boston, Brooklyn, Chicago, New York City, Philadelphia, Pittsburgh, San Francisco and Washington, D. C., have thus far been extended invitations to membership. The chairman of the organization committee is Dr. Walter Timme, New York City; Dr. Frederick Tilney, New York City, is chairman of the committee on arrangements for the first annual meeting.

FOREIGN

Physicians Wanted for the Dutch Colonies.—A German exchange quotes the *Nederlandsch Staatscourant* of Jan. 1, 1920, to the effect that positions are open to fifteen foreign

physicians in the Netherlands colonial medical service and fifteen more are to be open later. The contract calls for three or five years' service, with salary of 3,000 and 5,000 gulden and free transportation to and from the Dutch East Indies. Applicants must state whether they wish the shorter or longer contract or will serve in combating the plague, and enclose credentials. Address Departement van Kolonien.

British Medical Association Meeting.—The eighty-eighth meeting of the British Medical Association will be held at Cambridge, from June 29 to July 2, under the presidency of Sir Clifford Allbutt, who will deliver the president's address, Tuesday evening, June 29. The scientific and clinical work will be divided into twelve sections, and sessions will be held Wednesday, Thursday and Friday. The scientific discussions are scheduled for the morning sessions, while the afternoons will be taken up by clinical and laboratory demonstrations. A popular lecture by Dr. G. S. Graham-Smith on the evening of July 2 will mark the close of the meeting.

Professor Pawlow—Part of a letter from the Russian physiologist, Prof. J. P. Pawlow, of Petrograd, dated August, 1919, was republished in *Science* March 5, 1920. The letter was alleged to be an appeal to his friends in Kieff to send him some provisions as he was starving. The quoted sentence was: "Instead of science, I am busy peeling potatoes." This appeal has been copied the world around, but protests have also been published, expressing doubts as to its authenticity, as the two statements conflict. If he has potatoes to pare, he cannot be starving. It is also pointed that owing to the scarcity of servants, many professors now are engaged at times in peeling potatoes. No further news has been received direct from Petrograd regarding the matter.

Congress of Physiology.—A Congress of Physiology will be held at Paris, July 16-20, under the presidency of Prof. Charles Richet, and physiologists of allied and neutral countries are invited to attend. Titles and abstracts of papers to be read before the congress should be in the hands of the secretary not later than June 1. The abstracts should not exceed twenty-five lines. Information is also requested whether animal demonstrations or lantern slides will be used to illustrate the papers, and what animals and apparatus will be required. In connection with the congress, there will be an exhibition of laboratory apparatus and instruments. The fees for affiliation (35 francs) should be sent to M. Lucien Bull, at the office of the congress, Sorbonne, 1 rue Victor Cousin, Paris V.

Repeal of Extension of Health Insurance in Germany.—THE JOURNAL mentioned recently, page 1411, the new law whereby benefits of state health insurance were extended to all persons with incomes up to 20,000 marks. The *Deutsche medizinische Wochenschrift* now brings word that the National Assembly has yielded to the influence brought to bear by the profession, and has repealed this law, reducing the income limit to the old figure 12,000 marks. "By the vigorous and concerted action of the medical men of the country," the editorial states, "the profession has won an extraordinary victory. With amazing promptness the government submitted a new bill to the assembly; it was adopted and goes into effect May 3. The profession can see from this what can be accomplished by purposeful action, and that it is impossible for physicians' just demands to be ignored. It is to be hoped that they will proceed henceforth in this same united manner when it is a question of their vital interests."

Victory for the United Profession in Spain.—The health officers in Spain, the *médicos titulares*, have always been in the pay of the local municipal authorities, and this has led to numerous abuses. In many towns the local authorities have put off paying the *titulares* until they are years in arrears, and the health officials have suffered from actual want. A concerted movement has been on foot for some months to have the officially appointed health officers, prison physicians and veterinarians paid by the state, like the post-office employees. This has finally been secured, both houses having voted favorably on it after two all-night sessions of discussion. The victory was won at last by a single vote, the *Siglo Médico* relates. Cortezo, director of the *Siglo Médico*, was the leader of the forces in the senate. In an editorial commenting on the victory the appeal is made anew for "all physicians, health officers and others, high and low, to make their influence felt in the elections, refusing their support to every candidate, whatever his politics, who will not promise to aid and promote the wishes of the medical profession and sanitary reforms. Legislators who will work for the betterment of the race are good, whatever their political beliefs. . . . Health is the first thing; living comes before theorizing."

Deaths in the Profession in Other Countries

Dr. **C. Esmein** of Paris, on the editorial staff of the *Archives des maladies du cœur*, aged 38.——Dr. **A. Lapuente** of Buenos Aires.——Dr. **J. Veranes** of Madrid.——Dr. **Herculano Penna** Jr. of Floriano, Dr. **B. dos Anjos** of Bahia, and Dr. **Climerio de Oliveira,** professor of gynecology in the medical school at Bahia, all of Brazil.——Dr. **Alejandro García Aragón** of Turrialba, Costa Rica, a graduate of Yale, aged 48.——Dr. **G. T. Chalybaeus** of Dresden, aged 82.——Dr. **J. H. Spiegelberg** of the Ebenhausen Sanatorium for children, near Munich.——Dr. **W. Merkel,** Hofrat, of Nuremberg, aged 87.——Dr. **Rauzier,** professor of clinical medicine at the University of Montpellier, one of the founders of the Société neurologique and author of numerous works, including a treatise on the pathology of the elderly, aged 58.

LATIN AMERICA

New Home of the S. Paulo Medical Society.—The Sociedade de Medicina e Cirurgia of S. Paulo, Brazil, recently celebrated its twenty-fifth anniversary and at the same time took possession of its new home, rua do Carmo, 6.

Antirabies Institute in Nicaragua.—The *Brazil Medico* states that an antirabies institute was recently organized at Managa in Nicaragua. It is said to have been made possible by the generosity of the late president of Mexico, and is to be called by his name, Carranza Institute.

Chair of Physiology in Paraguay.—The medical faculty of the University of Paraguay at Asunción asked the minister of foreign affairs of Brazil to select an incumbent for the chair of physiology for a term of three years. He referred the matter to the Rio de Janeiro medical faculty, and they submitted the names of four candidates. The one selected, Dr. Roquette Pinto, has been livre docente of physiology at Rio for some time.

CORRECTION

Section on Laryngology.—In the minutes of the Section of Laryngology, Otology and Rhinology of April 30, which appeared in THE JOURNAL of May 15, page 1393, it is said, "Dr. Joseph L. Goodwin, Tazewell, Tenn., presented combined forceps and bronchoscope." This is an error, as this instrument was presented by Dr. A. Ellis Goodloe of Chattanooga, Tenn.

Government Services

Appropriation for History of War Approved in Senate

The efforts in behalf of a medical and surgical history of the World War now promise to be successful. The Senate Committee on Appropriations has made provision for the publication of such history by the insertion of an amendment in the Sundry Civil Bill that $75,000 be expended for this purpose. It is generally understood that the Senate will adopt this amendment which was approved by formal resolutions of the American Medical Association at its annual session in New Orleans this year. Surg.-Gen. M. W. Ireland made a special appeal to the Senate Committee in behalf of this appropriation.

Health Conditions of the Army

Health conditions among the troops in the United States continue excellent. The admission and noneffective rates, while showing a slight increase over last week, are still unusually low; and only a few cases of communicable diseases are reported from the various camps and stations, but nowhere have they assumed epidemic proportions. There were thirty-eight cases of measles reported against fifty-one the preceding week. The Western Department reports six admissions for diphtheria and Brooks Field, Texas, reports eight diphtheria carriers. Camp Taylor and the Western Department each report two new cases of pneumonia, and Camps Dix, Grant, Sherman and Fort Logan each report one. The death rate for disease, 1.5, is the lowest since September, 1917. There were only four deaths from disease, one each from pneumonia, empyema, cardiac dilatation, and surgical shock. Excellent health conditions prevail among the American Forces in Germany. There was but one death among these forces, the cause of which is not given.

Foreign Letters

LONDON

(From Our Regular Correspondent)

May 1, 1920.

Criticisms of American Universities

At a meeting of the Royal Colonial Institute, Sir A. E. Shipley read a paper on "Universities in Canada and the United States." He pointed out that Canada was better provided in proportion to population with universities and seats of education than these islands. London, with its population of 8,000,000, was content with one university, while Canada, with not much more than half that number of persons, had a larger number of universities than the United Kingdom. The cost of university training in Canada was considerably less than in the United Kingdom. Unlike the American universities, the Canadian had retained the British system of honors. In Toronto and McGill, the training in medicine was abreast of the best on the European continent. In the universities of the United States, the number of students was amazing. In the discussion that followed, Sir George Parkin said that in the American universities education was given on a democratic scale to great crowds, while Cambridge tried to educate men individually. One of the greatest results of the Rhodes scholarship would be that American students would be taught to realize that no teaching could be more efficient and inspiring than the individual system. Sir Gilbert Parker said that the mass method of teaching was wrong, and that the individual system of the English universities was by far the best.

The Place of Public Opinion in Preventive Medicine

Lecturing on this subject, Sir George Newman, chief medical officer of the ministry of health, said that we now knew that the causes of disease were not something arbitrary, capricious, occult or accidental, but an effect of causes in large and increasing measure controllable. For the first time public and personal health were purchasable. The problem could be stated in a word. The English people were suffering from impaired physique. Ten years of medical inspection in elementary schools had shown that no fewer than 1,000,000 children were so defective that they could not derive reasonable benefit from their schooling. The returns for 1914-1916 disclosed that more than half the insured persons in England and Wales received medical treatment every year and that there were upward of 14,000,000 weeks of sickness a year, most of which was due to preventable disease. In the year following Nov. 1, 1917, there were 2,425,184 examinations of recruits. Of this number only 36 per cent. were found to be of full normal health and strength, and 40 per cent. presented marked physical disabilities. The coming of the ministry of health meant a new sort of attack on the strongholds of disease. It meant increased intervention by the state, improved organization, central and local, and a bolder policy. But a factor in reform in some ways more important than all these was an educated community. We should never win through to a high physical standard until the great mass of the people were educated sufficiently to be able to choose the way of health. The dietary of the great mass of workers consisted of bread, beer, tea, pickles, canned meat, a bit of bacon and a piece of cheese. Appetizing cookery, freshly prepared food, healthy conditions and sound digestion were often absent. The reason was not poverty, but lack of knowledge. Sir George Newman emphasized the value of games and recreation. The nation ought to have available a complete scheme of educational and recreative gymnastics to train body and brain, combined with games, swimming, field sports and tennis. Invalidism, diseases and premature death were due to a relatively small number of morbid conditions, of which a large proportion were preventable. Thus, four principal diseases—pulmonary tuberculosis, influenza, poliomyelitis and cerebrospinal fever—were now known to be conveyed from person to person by inhalation of the causal microbe. Protection could be secured only by safeguarding one person from another on the individual scale. A clean mouth, clear breathing passages, abstinence from spitting, sneezing, coughing or shouting or breathing at other people would go a long way toward prevention. Other groups of maladies, such as dyspepsia, septic wounds and disease contracted by infection, could be considerably lessened by dissemination of simple knowledge as to their causation. The prevalence of venereal disease was a stain on our civilization. A further purpose of enlightened public opinion in regard to preventive medicine was that the assent of the community might be won for sanitary reform and its consent secured for sanitary government, imperial and local. Mere legislation would prove abortive if not supported by intelligent public opinion. The admirable work of the voluntary health societies could hardly be overestimated, and such a campaign as the national health week was particularly valuable.

The Medical Examination of Aeronauts

The air ministry has issued a schedule for the medical examination of civilian pilots, navigators and engineers. The candidate must be at least 19 years of age, of good heredity in respect to nervous stability, and free from any disease, injury or abnormality likely to interfere with efficiency. In addition to the general medical examination there are special flying tests. Among these is one for "expiratory force," as shown by readings on a U tube manometer. When the expiratory force is under 80 mm. of mercury, the subject will probably be incapable of sustained effort in routine aerial work. The special mental tests, such as the reaction time tests, to which the Italians and others have paid special attention, have not been adopted to any large extent, because we feel that a history of aptitude for various sports requiring eye is of equal value, as compared with a somewhat elaborate experiment on a special occasion under circumstances frequently trying to the applicant.

The Leper Problem

An important congress, summoned by the mission to lepers, of missionaries and physicians has been held at Calcutta under government auspices. The conference recognized that leprosy is a slowly contagious disease, in which the nasal discharge is frequently infectious before the stage of ulceration is reached; that, though the disease is not hereditary, children are peculiarly susceptible to infection, and that segregation is the most effective measure for reducing the prevalence of the disease. It was recommended that voluntary segregation should be encouraged except in the case of pauper lepers, in respect to whom compulsory powers should be obtained and settlements established. In view of the considerable fecundity of lepers, especially of females, separation of the sexes was advised. When this was not practicable, married lepers should be allowed to live together only on the understanding that any children born to them should be taken away at the earliest possible age. A bill has been introduced into the imperial legislative council following closely these recommendations.

Class Fertility

The declining birth rate seems to be an inexhaustible topic, always presenting new phases for discussion. At the Statistical Society, Dr. T. H. C. Stevenson, superintendent of statistics in the general register office, read a paper on the

fertility of the various social classes from the middle of the nineteenth century to 1911, based on information obtained in the last census as to the duration of marriages and the number of children born and surviving. He pointed out that in considering the differences in fertility between the various sections of the population it was necessary to bear in mind the differences in their child mortality. Taking the population as a whole, large families implied high, and small families low child mortality. It was possible, therefore, that the small families of the middle classes were in part due to the low mortality of their children, as well as the latter to the smallness of their families. In a typical case—wives married at 20 to 25 whose marriages had lasted from fifteen to twenty years—child mortality rose from 102 per thousand born in one-child families to 339 in twelve-child families and 407 in those of more than twelve children. This was due to the rapidity of births implied as well as to their number. At the same time, high fertility did not necessarily involve high mortality. Agricultural laborers were 37 per cent. more fertile than textile workers, but the mortality of their children was 35 per cent. less. The census figures not only showed that fertility increases downward in the social scale, but also suggested that this difference is of comparatively recent origin—in other words, that the defective fertility of the classes which are presumably the most successful and efficient is a new fact, the consequences of which are not yet apparent and will have to be faced. Comparatively little class variation in fertility is observed in marriages contracted before 1861. More recent marriages have been subject to the influences, whatever they may be, that have led to the fall in the birth rate from 1877 onward. Their fertility has rapidly declined, and at the same time the class variation has greatly increased, which suggests that artificial restraint is the main cause of the decline. This is confirmed by several other facts. The decline began in higher social strata and spread gradually downward; occupied mothers show a very low fertility, and infertility increases in the higher classes with increase of marriage duration up to twenty-five years. The comparatively low infant mortality in the less fertile classes goes very little way toward compensating for their low fertility. The least fertile classes are those that marry late in life. The fertility of occupied wives was found to be considerably lower than that of wives whose husbands had the same occupation. Thus, the fertility of male teachers was 70 per cent. of the average of all classes, but that of female teachers was only 52 per cent.

Osler's Will

Sir William Osler left an estate of the gross value of $80,000 with a net personalty of $58,000. He left his medical and scientific library (as cataloged) to the McGill University, Montreal, and all other property to his wife. At her death or earlier, if she should wish it, his residence, 13 Norham Gardens, Oxford, is to be given to the dean, canons and governing body of Christ Church as the residence of the regius professor of medicine.

The American Hospital in London

The plans for the American Hospital in London, already described in THE JOURNAL, are considerably advanced. Mr. Taft has accepted the office of president in America. Lord Reading is president in England, with Lord Bryce as vice president. American residents in London have formed themselves into a committee, which includes many prominent names, and steps are being taken to incorporate the institution according to the laws of the state of New York. It is hoped to open a temporary building this autumn. The hospital is intended to become the principal research center in Europe for American graduates. British physicians are in sympathy with the work, the committee including several eminent names, such as Sir Arbuthnot Lane, Sir Humphry Rolleston and Sir Bland-Sutton. There is also a committee in the United States which includes Drs. W. J. and C. H. Mayo, George W. Crile, A. J. Ochsner and Franklin Martin. The two medical committees will work together. In July the authorities of the hospital will entertain Dr. C. H. Mayo at dinner.

PARIS

(From Our Regular Correspondent)

April 29, 1920.

A Substitute for Bismuth Subnitrate

Since the war it has become difficult to procure a suitable quality of bismuth subnitrate. Moreover, all of the salts of bismuth have increased in price to such an extent that their use has become prohibitive to a large class of patients. This state of affairs has led to a search for an efficient substitute. Some years ago, after several regrettable cases of poisoning from bismuth subnitrate, it was proposed to substitute the subcarbonate. This suggestion had no regard for the question of economy, for bismuth subcarbonate is as costly as the subnitrate. It is therefore interesting to call attention to a recent communication before the Academy of Medicine, by Doctor Georges Hayem, formerly professor of clinical medicine at the Faculté de Médecine de Paris. He suggests that in place of bismuth subnitrate, there be employed kaolin, a white clay used in the manufacture of crockery and porcelain. Kaolin, an amorphous powder composed of silica and oxids of aluminum, iron and magnesium is almost insoluble in water and organic fluids. Hayem first employed it in 1915 as a substitute for bismuth subnitrate in a case of gastric ulcer. Favorable results were obtained and he extended its use to all conditions for which he had usually prescribed bismuth subnitrate, especially for the relief of gastralgia. If thoroughly cleansed, kaolin has no pronounced taste, and it can be employed mixed with water without a corrective. Still, to avoid loathing or a disagreeable sensation of taste, the kaolin may be made aromatic by adding to each 40 gm. one drop of essence of anise or six drops of essence of mint. It should be noted that Prof. J. Stumpf of Würzburg once recommended finely powdered kaolin for the treatment of acute and chronic intestinal infections, especially cholera. According to him, the remedy acts in a purely mechanical fashion by encompassing the microorganisms in some way and preventing their further multiplication.

Mouth Washes and the Tax on Pharmaceutic Specialties

By an act of Dec. 30, 1916, a tax was imposed on pharmaceutic specialties for which curative and prophylactic properties are claimed. This means that the tax in question does not apply to toilet preparations, such as mouth washes. But this is, however, not true if the manufacturer or merchant attributes therapeutic or prophylactic virtues to the mouth wash. Thus a perfumer was prosecuted in the court at Riom for selling a bottle of proprietary mouth wash without the tax stamp. The court had acquitted the merchant on the basis that as the product was a mouth wash, it came under the class of toilet specialties and not of pharmaceutic specialties. The representative of the bureau of indirect taxes carried the case to the court of appeals on the ground that the bottle was wrapped in a circular which announced that the mouth wash was a remedy for caries and toothache, whereupon the court ruled that the merchant had violated the law of 1916 by advertising the product as a therapeutic substance.

Honorable Distinction to the Faculty of Medicine of Nancy

The French government has recently directed public attention to the noble conduct of the personnel of the faculty of

medicine of Nancy (the teaching personnel, nurses and employees) who, for the entire duration of hostilities, at a short distance from the front, successfully continued its work with the limited resources left after military mobilization, united by a common spirit of solidarity for teaching as well as for the care of military and civil victims in the hospitals under its charge. Despite the repeated dangers to which Nancy was exposed, especially in 1918, at a time when by order of the government all universities should have been closed, the medical school remained open because of its obligations to the hospitals, thereby setting an example of constant energy, of cool courage and of the modest performance of daily duty.

The Evolution of Pathology and Medicine

In a series of books, "Les sciences d'aujourd'hui," under publication by Masson et Cie, there is a very interesting work on medicine by Prof. H. Roger, dean of the Paris medical faculty. The introductory paragraph contains a very accurate definition of medicine: "a science in its methods of study, an art in its applications." Both phases are the subjects of instructive discussion, touching on all that which might be called the philosophy of medicine and which may well merit the attention of all physicians.

Because of their originality, several chapters are worthy of special mention: those dealing with the evolution of pathology and with the evolution of medical science.

In his study of the evolution of pathology, Roger shows that certain diseases tend to decrease in frequency and to become confined to certain regions; it may be hoped that they will disappear entirely before long. Leprosy furnishes the most striking example: in the thirteenth century, there were 19,000 leprosariums in Europe, 2,000 in France alone. Today, leprosy is localized to a few countries, while in France only sporadic cases are found near Marseilles and Nice. On the other hand, there are diseases which appeared at a certain epoch and which do not seem destined to disappear so soon. The eruptive fevers, for instance, originated in the sixth century, and cerebrospinal meningitis was unknown until the nineteenth century. Devastating epidemics were preceded by cosmic disturbances, by great variations in temperature and pressure or by earthquakes. Virchow once hoped that a thorough study of these various causes would lead to reliable prediction of the imminence of epidemics, analogous to meteorologic forecasts. But what is even more interesting is the influence of social conditions on the change in pathology. Thus, industrial progress has greatly increased poisonings from adulteration; by extending its fields of activity, industry has also increased the varieties of occupational poisoning, although various prophylactic measures have succeeded in reestablishing the equilibrium by reducing the frequency of these accidents.

Proceeding from the point that the social condition of a country influences the morbid reactions and has a special effect on psychopathic manifestations, Roger wonders what influence the war will exercise on the insanities. It is probable, he says, that a profound change will be effected: the war has wiped out our old utopias and has developed the sense of realities. Men will no longer be solicitous for position and honor but they will pursue pleasure and riches with much greater brutality. The present agitations and the new difficulties of existence will certainly have their effect on us and they will lead to another evolution of the psychopathies.

On the other hand, after tracing the historic evolution of science, Roger arrives at the conclusion that this has profoundly modified the traditional methods of medicine. In times past, diagnosis was based on very simple methods of examination, and therapeutics consisted of pharmaceutic prescriptions; today certain delicate diagnoses require complex procedures and explorations which demand special installations. Roger forecasts, therefore, that sooner of later diagnostic establishments will be organized where persons with chronic diseases, overworked and even well subjects will stay for several days, and on a case history card will be recorded the functional condition of each organ. It will also be easy to give such advice on diet and hygiene as is advisable and to point out prophylactic measures necessary to avoid menacing danger.

Exchange of Professors

Exchange of professors with foreign universities, for a long time practiced by the Faculté des lettres de Paris is gradually extending to the other faculties. Thus the council of the University of Paris has recently approved a course in the law school by M. André Mercier, dean of the faculty of Geneva. On this point the *Gazette des hôpitaux* says that there is every reason to hope that the medical faculty, under the active impulsion of the dean, Professor Roger, will soon enter into exchange relations with English and American universities.

Faculty Appointments

Doctor André Broca, agrégé, has been appointed professor of medical physics of the Paris medical faculty, succeeding Professor Weiss, recently appointed dean of the medical faculty of Strasbourg.

Student Welfare

The University Society for Student Welfare recently held a meeting at the Sorbonne under the presidency of M. Appel, rector of the University of Paris. The society is designed to give material and moral support to all students who may feel in need thereof. Various lines of activity have been proposed: the establishment of numerous student centers (foyers); the organization of a service of information, intelligence and medical assistance; the consolidation of extant associations and houses for students, and similar measures.

Consulting Medical Commission of the Aviation Service

There has recently been appointed by the undersecretary of the state for aviation a consulting medical commission, with instructions to publish a scientific program of research for the medical section of the technical service of aviation, to assure the necessary scientific authority to medical measures submitted for the approval of the undersecretary of state, and in a general way to decide all related questions such as the testing of physical fitness or the treatment of aviators. The commission under the presidency of Dr. Georges Guillain, includes Drs. Pierre Duval, André Broca, Camus, Crouzon and others.

Marriages

JOHN IGNATIUS WISEMAN, Baltimore, to Dr. Katherine Isabel Tate Slattery Fricka of Boston, April 24.

GUY MANNERING OWSLEY, Thorntown, Ind., to Miss Charlotte M. Smith of Columbus, Ind., April 6.

HILMAR GEORGE MARTIN, Milwaukee, to Miss Grace A. Waring of Washington, D. C., April 27.

THOMAS DUGAN BAXTER, Chilton, Texas, to Miss Eunice Lotridge of Nashville, Tenn., April 14.

HARRY JAY PITTOCK to Miss Maude Mae Burgoon, both of Hastings, Neb., May 12.

WALTER L. DREWRY to Miss Esse C. Morris, both of El Paso, Texas, April 18.

CHARLES KLAUS STULIK to Miss Zdenka Spatney, both of Chicago, May 10.

DANIEL LEONARD GOLANN to Miss Ethel Block, both of Brooklyn, May 8.

Deaths

Lindon Bulkley Cady, New York City; Columbia University, College of Physicians and Surgeons, New York City, 1914; aged 31; a member of the Medical Society of the State of New York; assistant surgeon, U. S. N. R. F., and relieved from active duty April 10, 1919; clinical assistant in the New York Skin and Cancer Hospital; died in St. Luke's Hospital, New York City, May 13, two days after a surgical operation.

Edward Sealy, Newark, N. J.; Bellevue Hospital College, 1884; aged 71; a member of the Medical Society of New Jersey; attending physician to the Home for the Friendless, Newark; attending surgeon, throat department, New York Eye and Ear Infirmary, and senior surgeon to the Hospital for Women and Children, Newark; died in that institution, May 11, from cerebral hemorrhage.

Charles Lee King ⊕ Pasadena, Calif.; Chicago Medical College, 1880; aged 66; once secretary of the Los Angeles County Medical Society, and president of the Pasadena Branch of the Los Angeles County Medical Society; for three years medical superintendent of the Alma (Mich.) Sanitarium; president of the Pasadena Y. M. C. A. from 1915 to 1918; died, May 5.

Arthur Ellison Midgley ⊕ Whitewater, Wis.; University of Illinois, Chicago, 1904; aged 41; lieutenant-colonel, M. C., U. S. Army, and discharged Sept. 23, 1919; cited for bravery by his divisional commander and General Pershing, April 19, 1918; died, May 20, from the effects of a gunshot wound of the heart, self-inflicted, it is believed, with suicidal intent.

James Lindsey Porteous ⊕ Yonkers, N. Y.; L.R.C.P. and S. (Edin.), 1867; M.R.C.P. (Edin.) 1878; F.R.C.S. (Edin.), 1879; consulting surgeon to St. Joseph's Hospital; a fellow of the New York Academy of Medicine, and formerly vice president of the Westchester County Medical Society; aged 78; died, May 13.

Rudolph R. Seidel, Bedford, Ohio; Western Reserve University, Cleveland, Ohio, 1893; aged 52; a member of the Ohio State Medical Association; who was struck by an interurban car in Bedford, April 21, suffering a fracture of the skull; died in St. Alexis Hospital, Cleveland, May 5.

William Joseph Dismuke ⊕ Ocilla, Ga.; University of Georgia, Augusta, 1901; aged 48; a member of the Georgia Surgeons Club; local surgeon for the Seaboard Air Line, and general surgeon for the Ocilla Southern Railroad; died, May 13, following an operation for appendiceal abscess.

Archibald Haas, Chicago; Bennett Medical College, Chicago, 1882; College of Physicians and Surgeons, Chicago, 1886; aged 70; died, May 22, from the effects of a gunshot wound, self-inflicted, it is believed, with suicidal intent, while despondent on account of ill health.

Charles Edwin Boddiger ⊕ Chicago; College of Physicians and Surgeons, Chicago, 1893; aged 52; captain, M. R. C., U. S. Army, and discharged Dec. 14, 1918; who was operated on for glioma of the brain, March 10, died in Wesley Memorial Hospital, Chicago, May 22.

Thomas Henry Landor ⊕ Canton, Ohio; McGill University, Montreal, 1884; aged 57; contract surgeon, and captain and assistant surgeon, U. S. V., from 1898 to 1908, with service in the Philippine Islands; died, May 6, from hypertrophy of the liver, and gastric ulcer.

Waldemar F. Lungerhausen, Mount Clemens, Mich.; University of Pennsylvania, Philadelphia, 1897; aged 42; a member of the Michigan State Medical Society and president of the Macomb County Medical Society; died, May 1, from cerebral hemorrhage.

William Addison Elrod, Albertville, Ala.; University of the South, Sewanee, Tenn., 1900; aged 50; a member of the Medical Association of the State of Alabama; died in Gadsden (Ala.) General Hospital, May 7, a week after a surgical operation.

Francis C. Maloney, Avilla, Ind.; Charity Hospital Medical College, Cleveland, 1866; aged 75; a member of the Indiana State Medical Association; died in Sacred Heart Hospital, Garrett, Ind., May 4, a few days after a surgical operation.

Jacob Prinzing ⊕ Nampa, Idaho; University of Minnesota College of Medicine, Minneapolis, 1901; aged 44; lieutenant, M. R. C., U. S. Army, with service at Camp Lewis, Wash., and discharged Jan. 23, 1919; died, May 7, from acute peritonitis following an operation for gastric ulcer.

Persis White, Winnetka, Ill.; Northwestern University Woman's Medical School, Chicago, 1894; for eight years resident physician at the North Shore Health Resort, Winnetka; died, May 20, in St. Mary's Hospital, Rochester, Minn.

Dewitt C. Joyner, Memphis, Tenn. (license, Arkansas); aged 71; a practitioner since 1861, and for more than half a century a practitioner of Mississippi County, Ark.; surgeon in the Confederate service during the Civil War; died, May 5.

Charles Milo Holcomb, Seattle; Jefferson Medical College, 1887; aged 60; a member of the Washington State Medical Association; died in the Seattle General Hospital, May 3, two days after a surgical operation.

Harvey Gilbert, Bay City, Mich.; New York Homeopathic Medical College, New York City, 1874; aged 73; at one time coroner of Bay County and health officer of Bay City; died, May 2, from cerebral hemorrhage.

Alzine M. Castlebury, Williamsport, Pa.; Woman's Medical College of Pennsylvania, Philadelphia, 1892; a member of the Medical Society of the State of Pennsylvania, aged 61; died, April 24, from rheumatism.

Warren Randall Gilman ⊕ Worcester, Mass.; Harvard University Medical School, 1888; aged 58; for many years a member of the staff of the Worcester City and Worcester Memorial hospitals; died, May 2.

Alwin Hugo Schwab ⊕ Brooklyn; College of Physicians and Surgeons in the City of New York, 1890; aged 52; while making a professional call, May 15; died from heart disease in the home of the patient.

William Allen Stallworth, Beatrice, Ala.; Medical College of Alabama, Mobile, 1893; aged 52; a member of the Medical Association of the State of Alabama; died, April 3, from carcinoma of the throat.

Malin Burdett Shaw, Eden Center, N. Y.; University of Buffalo, 1866; Bellevue Hospital Medical College, 1874; aged 80; health physician of the town of Eden; died, May 2, from organic heart disease.

James B. Shaw, Sheridan, Ark.; University of Nashville, Tenn., 1882; aged 72; a member of the Arkansas Medical Society; president of the Grant County Medical Society in 1913; died, March 23.

Valentine Winters Anderson, Dayton, Ohio; Louisville (Ky.) National Medical College, 1900; Michigan College of Medicine and Surgery, Detroit, 1904; died, May 10, from cerebral hemorrhage.

John William Voss, Beverly, Mass.; University of Pennsylvania, Philadelphia, 1894; aged 53; captain, M. R. C., U. S. Army, and discharged Dec. 11, 1918; died, May 10, from heart disease.

Charles F. Cushing, Elyria, Ohio; Western Homeopathic College, Cleveland, 1861; aged 90; for many years a member of the staff of Elyria Memorial Hospital; died, May 3, from pneumonia.

Harl L. Gee, Mount Vernon, Ill.; Washington University, St. Louis, 1898; aged 45; a member of the Illinois State Medical Society; died, April 26, from pulmonary tuberculosis.

W. E. Newcombe, North Vancouver, B. C.; McGill University, Montreal, 1901; acting medical health officer of Vancouver; died, March 9, from pneumonia following influenza.

James Edward Earle Nelles, Oak Park, Ill.; University of Illinois, Chicago, 1907; aged 35; who served with the Canadian Army Medical Corps in England; died, March 12.

Herbert Harris, North Syracuse, N. Y.; Chicago Medical College, 1866; aged 80; for many years a practitioner of Hinsdale, Mich., and Skaneateles, N. Y.; died, May 1.

William H. Wells, Buckingham, Ill.; University of Louisville, Ky., 1883; aged 66; a member of the Illinois State Medical Society; died, April 30, from chronic bronchitis.

Horace M. White, Philadelphia; Jefferson Medical College, 1861; aged 82; a practitioner of dentistry since 1869; died, May 4, from septicemia following a carbuncle.

James B. Patterson, Rockford, Ill.; Jefferson Medical College, 1862; aged 80; who fell March 2, fracturing his hip, died from senile myocarditis, April 2.

Thomas G. McPherson, Beaver Falls, Pa.; Western Homeopathic College, Cleveland, 1864; aged 82; died, May 9.

Frank C. Seeley, Algona, Iowa; University of Michigan, Ann Arbor, 1874; aged 73; died, April 27.

⊕ Indicates "Fellow" of the American Medical Association.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE FRAUD ON THE PUBLIC AND ON THE PROFESSION

HOSTETTER'S BITTERS

"Hostetter's Celebrated Stomach Bitters" contains 25 per cent. alcohol. So far as is shown by a careful investigation made by the A. M. A. Chemical Laboratory, the amount of this nostrum that can be taken is limited only by the individual's capacity for alcohol! The label, as the law requires, declares the presence of 25 per cent. alcohol; that is, "Hostetter's Bitters" is one half the strength of "straight" whisky. The recommended daily dose is six tablespoonfuls (3 ounces). This means that a person taking Hostetter's Bitters—strictly according to directions—gets as much alcohol daily as would be obtained from nearly two bottles of beer (alcohol strength 3½ per cent. by volume) or from 1½ ounces of "straight" whisky.

The alcohol content of Hostetter's Bitters seems to have been a variable quantity. As long ago as 1878 the question of the beverage use of this nostrum in Alaska was under consideration by the Internal Revenue Department. A letter from the Commissioner of Internal Revenue at that time stated that Hostetter's Bitters was sometimes sold by the glass by retail liquor dealers and also sold "by the drink" in saloons in Sitka. In January, 1883, the Treasury Department notified the Collector of Customs at Sitka that, in its opinion, Hostetter's Bitters "should be excluded from Alaska under the executive order of Feb. 4, 1870, forbidding the importation of distilled spirits into that territory."

Miniature reproduction of one of the educational posters prepared by the Propaganda Department of THE JOURNAL. In the originals, which measure 22 by 28 inches, the bottles and glass are reproduced natural size.

In THE JOURNAL of Sept. 8, 1883, there was published in full a long communication from the Office of Internal Revenue addressed to the manufacturers of Hostetter's Bitters, in a reply to their question as to whether or not it was necessary for the retailers of the "Bitters" to take out a special license for its sale. The Internal Revenue officials declared that a chemist in the Department of Agriculture had analyzed Hostetter's Bitters and had reported finding 32 per cent. alcohol—whether by weight or volume was not stated—64 per cent. water and 4 per cent. of extracts. The chemist reported further that the stuff was "flavored with various essential oils, as oil of anise, coriander, etc., and contains some vegetable bitters, such as gentian, cinchona, etc." The chemist very naturally declared that Hostetter's Bitters contained much more alcohol than was necessary to hold the other ingredients in solution. Commenting on this analysis, the Commissioner of Internal Revenue said:

"Containing, as it does, no deleterious drugs and only 4 per cent. of anything like a drug, I should probably be entirely justified in deciding outright that one who sells it for any purpose is a retail liquor dealer. . . ."

The Commissioner admitted, however, that the case was complicated by the fact that for many years the government had "classified the preparation as a proprietary medicine and collected stamp tax upon it." As a result, the Commissioner said that he would not decide at that time whether in the abstract Hostetter's Bitters was a medicine or not. For, said he:

"Should I hold it to be a medicine, I should probably do violence to an almost irresistible tendency of the mind to conclude that no genuine medicine needs so much whisky and so few drugs in it, unless under very unusual circumstances. On the other hand, should I decide that it is no medicine at all, I would be confronted by a ten-years' *quasi* recognition by this office to the contrary, as well as by the practice of many people who use it as such."

The upshot of this case was that the Commissioner decided to "let the use give character to it"; when the stuff was, apparently, sold as a *bona fide* medicine no action would be taken; when it was sold to be drunk as an intoxicating beverage the seller would be taxed accordingly. The Commissioner's letter closed with the statement:

"This seems to me to be the true rule, and an article containing so little that is even nominally medicinal as yours does ought and will be subject to very close scrutiny as to its use."

In 1906, the state chemists of North Dakota reported that their analysis showed Hostetter's Bitters to contain 43 per cent. of alcohol by volume, with only 4½ per cent. of total solids, and the chemists reported that the principal portion of the total solids was sugar.

In 1907, after the Food and Drugs Act went into force, and the amount of alcohol had to be declared on the label, Hostetter's Bitters for a time contained 39 per cent. alcohol, the label reading in part:

"Averaging thirty-nine per cent. of alcohol by volume in finished product, being only sufficient to hold in solution the extracted medicinal properties of barks, roots, herbs and seeds contained therein."

Later, the amount of alcohol was reduced to 25 per cent. and the labels were changed to read, as they read today:

"Averaging twenty-five per cent. of alcohol by volume in finished product, being only sufficient to hold in solution the extracted medicinal properties of barks, roots, herbs and seeds contained therein."

In 1914, the state chemists of Connecticut analyzed the nostrum and reported finding nearly 25 per cent. of alcohol, a small amount of quinin and about 4½ per cent. of solids "all but 0.8 per cent. of which is sugar."

The kind and quantities of drugs (other than alcohol) in Hostetter's Bitters have, so far as we know, never been divulged, to the consumers at least, by the manufacturers. Formulas purporting to represent the composition of this nostrum had variously given, as some of the ingredients, gentian root, blessed thistle, cinchona bark, calamus root, colombo root, orange peel, rhubarb, cinnamon and cloves.

In April, 1920, the A. M. A. Chemical Laboratory completed an analysis of Hostetter's Bitters. The complete details of analysis will, as usual, be published in the Annual Reports of the Laboratory. The essential part of the report follows:

LABORATORY REPORT

"The specimen of Hostetter's Stomach Bitters examined was a pale amber-colored liquid having a bitter taste, a neutral reaction and an odor resembling a mixture of anise and orange flavors. The label declared the presence of 25 per cent. of alcohol but gave no further information concerning the composition of the preparation. The prepara-ion

is described, among other things, as 'a corrective and mild cathartic.' Alcohol was determined and 24.72 per cent. by volume was found. On evaporation the preparation gave 4.8 gm. of residue per 100 c.c. of which about 80 per cent. was cane sugar. The ash amounted to about 0.045 gm. per 100 c.c. The small percentage of ash excluded the presence in medicinal quantities of such purgative salts as magnesium citrate, magnesium sulphate and potassium sodium tartrate. Extraction of the faintly acidified solution with ether gave 0.023 gm. of ether extract per 100 c.c. This residue was of a pale greenish color and had a bitter taste suggestive of gentian. No active medicinal substances could be identified in this residue.

"The ether extract from 100 c.c. of the preparation was mixed with milk sugar and swallowed by a healthy man without producing any symptoms. This demonstrated the absence of appreciable amounts of podophyllum, scammony and jalap.

"Iodids, bromids, heavy metals, emodin-bearing (laxative) drugs, and phenolphthalein were absent. Traces of tannin were found. A mixture of alkaloids was present in which quinin and cinchonidin were identified. This, together with the occurrence of tannin, suggested the probable presence in Hostetter's Stomach Bitters of extractives from cinchona. The total alkaloids amounted to 0.167 gm. per 100 c.c. or about ¾ grain per fluid ounce. With the exceptions of the alcohol and the cinchona alkaloids no other physiologically active ingredient was found.

"Six fluid ounces of the preparation (6 doses) were dealcoholized, the solution evaporated, the residue mixed with milk sugar, the mixture placed in capsules and the capsules swallowed at one dose by a healthy man. No effects were noted.

"From the results of the examination it is evident that alcohol is by far the most active ingredient in Hostetter's Stomach Bitters. The preparation is probably a hydro-alcoholic extract of small quantities of cinchona and possibly small amounts of other relatively inactive drugs. The analysis failed to reveal the presence of any drugs in quantities which would prevent the preparation being used as a beverage."

It is obvious from the analysis just given that, as stated at the outset of this article, the use of Hostetter's Bitters as a beverage is, apparently, limited only by the individual's tolerance for alcohol. One point is worth attention: Hostetter's Stomach Bitters has for a good many years been recommended for malaria among numerous other conditions. The A. M. A. chemists found small quantities of quinin and cinchonidin present. In order to get a daily dose of quinin equal to 15 grains, the minimum amount the Pharmacopeia recommends as an antimalarial, it would be necessary to take nearly twenty ounces of Hostetter's Bitters daily. This would necessitate swallowing an amount of alcohol equivalent to about 10 ounces daily of "straight" whisky.

Many of our readers will remember THE JOURNAL'S reference to an episode that occurred three years ago. The Baltimore *Sun* of Feb. 24, 1917, carried a news item from Danville, Va., to the effect that the police in that town had had to deal with a large number of "drunks" each of whom admitted that he became intoxicated on "a certain proprietary medicine which contains 25 per cent. alcohol." A telegram from THE JOURNAL to the Chief of Police of Danville asking for the name of the proprietary medicine in question, brought the laconic reply "Hostetter's Bitters."

During the recent past several nostrums of the alcohol type have markedly modified their formulas. "Vinol," which used to contain 18 per cent. alcohol, now contains 10 per cent. "Manola," which used to contain 18 per cent., now contains 15 per cent.; "Peruna," which long contained 20 per cent. alcohol, now contains 12. "Wine of Cardui," which also for years contained what the manufacturers declared was the irreducible minimum of 20 per cent., now contains 10. "Warner's Safe Cure," put out by a concern that used to be what was practically a subsidiary company to a distilling concern, for years had 15.5 per cent. alcohol; it is now nonalcoholic. The motives that brought about these changes are unimportant; the facts are the vital elements. Whether some of these manufacturers have received hints from the Internal Revenue Department, whether the increased cost of alcohol or whether both have been responsible for the modifications, we do not know.

Whatever may have been the cause, or causes, of the changes in the case of the products just mentioned, they do not seem to have operated in the case of Hostetter's Bitters. To this fact we respectfully direct the attention of the Internal Revenue Department.

Correspondence

INDICATIONS FOR OPENING THE DRUM IN ACUTE MIDDLE EAR INFECTIONS

To the Editor:—In the main, I am in agreement with the views set forth by Dr. L. E. La Fétra in his article on "Acute Middle Ear Infection in Children" (THE JOURNAL, May 1, 1920, p. 1222). But I must question his judgment regarding the indications for incision of the membrana tympani. Dr. La Fétra states that when the temperature is high, pain acute and the bulging marked, he deems it best to incise the drum. Further, he says that the infrequency of mastoid involvement and other complications, and the very satisfactory results of conservative treatment are his justification for awaiting further indications than those of the day of onset. Again, he states that if tenderness elicited by pressure on the tragus increases, if there is tenderness of the tip of the mastoid and the temperature remains high after twenty-four hours and the bulging persists, incision is necessary.

The incision of the drum—especially in a young child—is indicated, according to my experience, which is not a small one both in public and in private practice, if there is bulging, notwithstanding the absence of pain or abnormal temperature. There is another indication besides the danger of the involvement of the mastoid, etc., for freeing the exudate from the drum cavity when the drum is bulging, namely, the preservation of the hearing function. I have seen rosy-cheeked children who were cheerful, took their food, were playful and slept well, with the drum cavity full of pus. In some cases the disease was discovered in the routine of a general examination, because the child did not thrive.

To leave ears alone because of the absence of pain and abnormal temperature is to invite disaster, especially in measles and scarlet fever. The hearing function has been destroyed without the presence of pain or abnormal temperature; chronic suppuration of the middle ear has followed without pain or fever, or both. The tympanic structures in a child are soon destroyed. Owing to the exceedingly thin covering of the inner wall of the tympanum with periosteum, the lower portion of the promontory especially is very poorly protected. I have frequently heard the statement from intelligent general practitioners that as there was no pain or high temperature there was no occasion for examining the ears. I have seen mastoids destroyed without pain in the adult. In tuberculous subjects, young or old, there is little or no pain. In infection with *Streptococcus mucosus*, pain may be absent, with little or no rise of temperature.

In some cases the process is fulminating, so that no time should be lost in evacuating the tympanic contents. In other words, it is absolutely impossible to tell what is going to happen to a bulging drum. Furthermore, it is only the well-to-do who can afford to have unremitting attention paid to their condition, or those in a hospital; and if the intern or the attending physician is too busy to watch these patients carefully, valuable time may be lost. Therefore, while patients with bulging drums may recover by conservative treatment, the end-result may not also be good, for this exudate may cause adhesions, and if it involves the region of the round and oval windows, serious impairment of hearing may ensue. I have tried conservatism, but I feel that prompt action has given more satisfactory results than the

awaiting of the prolongation of the symptoms. The drum may rupture spontaneously, and this is to be avoided, as a sloughed opening is not as desirable as an incised one, although the spontaneous opening may be widened. One must consider that before the opening is sloughed open, damage is being done to the interior of the tympanum.

Edward L. Meierhof, M.D., New York.

PRIORITY IN SUGGESTING TRANSILLUMINATION FOR FOREIGN BODIES

To the Editor:—In The Journal, Sept. 6, 1919, p. 766, there was published a clinical note on "The Removal of Foreign Bodies from the Tissues by the Use of Transillumination," by A. G. Bettman, M.D., Portland, Ore. The method is not new. I described it in the *Medical Record*, Nov. 4, 1911, under the heading: "Transillumination in Locating Foreign Bodies in the Extremities."

Morris H. Kahn, M.D., New York.

REVERSAL OF THE LYMPH CIRCULATION IN SURGICAL DRAINAGE

To the Editor:—Exception has been taken by several writers to the expression "reversal of the lymph circulation" used in my article on "Surgical Drainage from a Biologic Point of View" (The Journal, Jan. 17, 1920, p. 159). The term was used to describe what appears to be the chief biologic process by which drainage acts beneficially in solid soft tissue and in endothelial cavities.

The words "reversal of the lymph circulation" may not have been happily chosen, but I know no other phrase that would be quite as satisfactory. I fully appreciate the impossibility of any real reversal of blood circulation, and in other communications I have attempted to demonstrate that a vein and its contributing branches would not function as an artery when an arterial current is turned into the vein (Horsley and Whitehead: The Journal, March 13, 1915, p. 873; Horsley: *Annals of Surgery*, March, 1916, p. 277). It was at one time, however, rather generally held that the blood circulation could be reversed in this manner.

The phrase "reversal of the lymph circulation" is not intended to mean reversal in the physiologic sense, that is, change in the direction of the lymph current within its normal channels. Surgical drainage is not a physiologic but a pathologic process. Lymph or serum is continually poured around an offending foreign body until the foreign body is removed. This lymph comes partly from the injured lymph channels and lymph spaces in the tissues and partly through the uninjured walls of the lymph channels, which become more permeable with the hyperemia that is present when surgical drainage is necessary.

These are facts that are largely self evident. The moot point is whether this process can be called reversal of the lymph circulation. This phrase was used because it seems to me that the current of lymph or serum continually poured out to the surface of the skin for days or weeks constitutes in a sense a circulation of lymph. This current, if it rises to the surface of the body and appears on the skin or mucous membrane, is not in the direction of any known normal lymph current and probably is a reversal, or at least a deflection, of the direction of the adjoining normal lymph currents. Then, too, this phrase seems to emphasize a phenomenon that many surgeons apparently ignore. The phrase "outpouring of lymph" occurred to me, but this suggests an almost instantaneous process, or at least one that covers a very short space of time.

It may also be objected that "lymph" is used in rather a loose sense. I have employed it as indicating the thin, clear fluid that is found in the lymph channels and spaces of the body and that infiltrates the tissues in edema. In order to describe the phenomena of surgical drainage, it appears to be necessary to use the words lymph or serum to indicate such fluids.

J. Shelton Horsley, M.D., Richmond, Va.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

DECOLORIZATION OF HAINES' SOLUTION—DIFFERENTIATION OF PUS CELLS FROM LEUKOCYTES IN URINE

To the Editor:—1. Will you kindly tell me what it is in the urine that takes all of the blue color out of a Haines test solution—that is, makes it clear like water Two weeks ago the urine of a woman was heavily loaded with sugar. Under diet there is now no sugar, but 10 drops in a dram of Haines' solution takes out all the color, as stated.

2. In a report sent out by an insurance company to its policy holders on the microscopic examination of urine, there are two blank spaces. One space is for leukocytes, and the other for pus cells. The report may read "leukocytes none," "pus cells few." I wish you would tell me how the different kinds of white cells can be made out in a urinary examination?

James L. Tracy, M.D., Toledo, Ohio.

Answer.—1. In the use of Haines' or other copper test solutions, the presence of sugar is denoted by the formation of a yellow or reddish precipitate of cuprous oxid. The extent of the precipitate is partly dependent on the amount of sugar in the urine used. In some cases, in which the sugar is low in amount, only slight precipitation is evident; but some precipitation of the cuprous oxid should be noted in the presence of sugar. Mere decolorization of the copper solution is in no way indicative of the presence of sugar. This decolorization is observed with urines showing an excess of creatinin, uric acid, conjugated glycuronates, and certain preservatives. However, if these substances are present in large amounts, typical precipitation of the cuprous oxid may occur. A direct answer, therefore, to the first question would be that the decolorization of the Haines' solution was due to excess of creatinin, or uric acid, or to conjugated glycuronates if the patient has been taking some drug which is excreted in the urine as a conjugated glycuronate.

2. Concerning the differentiation of pus cells from leukocytes in a urinary sediment, it is to be said that this rests largely on the number and appearance of the cells in question. Practically every specimen of urine shows occasional scattered white cells, but these are not to be dignified by the term "pus cells" unless present in appreciable numbers, many of which are grouped in clumps. The true leukocytes show, when stained, a well-defined nucleus and granulations, while the pus cell exhibits an irregular, granular, degenerated nucleus owing to the lysis that is occurring in the cell. As a rule, a few cells in the sediment are reported as leukocytes rather than as pus cells, being given the latter name only when present in number. As the usual pus cell corresponds to the polymorphonuclear leukocyte, staining methods must be resorted to in order to bring out the character of the nucleus and the granular bodies, both of which characteristics are not clearly shown in pus cells, as stated above. In the usual run of urinary examinations this procedure is not followed, as the number and grouping of the white cells is ordinarily sufficient to permit a diagnosis.

STERILIZATION OF CYSTOSCOPES AND URETERAL CATHETERS

To the Editor:—Kindly send formula for the sterilization of cystoscopes and ureteral catheters.

A. H. Winkel, Three Forks, Mont.

Answer.—Although instruments composed entirely of metal, or of both metal and glass, or of soft rubber can be sterilized without injury by boiling for from one to three minutes in water or better a 2 per cent. solution of sodium carbonate to prevent tarnishing, preference, in the case of cystoscopes is given to immersing the instrument before use in 5 per cent. phenol solution for from ten to fifteen minutes. Formaldehyd gas is also used but unless whatever is exposed to its action is left in the open for a little while before use, irritation is likely to result with unpleasant consequences to the patient; therefore, the phenol solution is given preference. Ureteral catheters may be boiled unless made of woven fabric in which case they, too, should be immersed in the phenol solution.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALABAMA: Montgomery, July 13. Chairman, Dr. S. W. Welch, Montgomery.

ARIZONA: Phoenix, July 6-7. Sec., Dr. Ancil Martin, 207 Goodrich Bldg., Phoenix.

CALIFORNIA: San Francisco, June 28-July 1. Sec., Dr. Chas. B. Pinkham, 135 Stockton St., San Francisco.

COLORADO: Denver, July 6. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

CONNECTICUT: Hartford, July 6-7. Sec., Regular Board, Dr. Robert L. Rowley, 49 Pearl St., Hartford.

CONNECTICUT: New Haven, July 13. Sec. Eclectic Board, Dr. James Edwin Hair, 730 State St., Bridgeport. Sec. Homeo. Board, Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.

DELAWARE: Wilmington, June 15-17. Pres. Medical Council, Dr. H. W. Briggs, 1026 Jackson St., Wilmington.

DISTRICT OF COLUMBIA: Washington, July 13-15. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.

FLORIDA: Eclectic Board, Jacksonville, June 18-19. Sec., Dr. G. A. Munch, 1306 Franklin St., Tampa.

FLORIDA: Regular Board, Jacksonville, June 14-15. Sec., Dr. Wm. M. Rowlett, Citizens Bank Bldg., Tampa.

GEORGIA: Atlanta, June 9-11. Sec., Dr. C. T. Nolan, Marietta.

ILLINOIS: Chicago, June 14-17. Director, Mr. Francis W. Shepardson, Springfield.

IOWA: Iowa City, June 16-18. Sec., Dr. Guilford H. Sumner, Capitol Bldg., Des Moines.

KANSAS: Topeka, June 15-16. Sec., Dr. H. A. Dykes, Lebanon.

LOUISIANA: New Orleans, June 10-12. Sec., Dr. E. W. Mahler, 141 Elk Place, New Orleans.

MAINE: Portland, July 6-7. Sec., Dr. Frank W. Searle, 140 Pine St., Portland.

MARYLAND: Baltimore, June 15. Sec., Dr. J. McP. Scott, 137 W. Washington St., Hagerstown.

MICHIGAN: Ann Arbor, June 8-10. Sec., Dr. B. D. Harrison, 504 Washington Arcade, Detroit.

MINNESOTA: Minneapolis, June 1-4. Sec., Dr. Thos. McDavitt, 539 Lowry Bldg., St. Paul.

MISSOURI: St. Louis, June 14-16. Sec., Dr. Geo. H. Jones, State House, Jefferson City.

NEBRASKA: Lincoln, June 9-11. Sec., Department of Public Welfare, Mr. H. H. Antles, Lincoln.

NEW JERSEY: Trenton, June 15-16. Sec., Dr. Alexander MacAlister, State House, Trenton.

NEW MEXICO: Santa Fe, July 12-13. Sec., Dr. R. E. McBride, Las Cruces.

NORTH CAROLINA: Raleigh, June 21. Sec., Dr. H. A. Royster, 423 Fayetteville St., Raleigh.

NORTH DAKOTA: Grand Forks, July 6-9. Sec., Dr. Geo. M. Williamson, 860 Belmont Ave., Grand Forks.

OHIO: Columbus, June 8-11. Sec., Dr. H. M. Platter, State House, Columbus.

OKLAHOMA: Oklahoma City, July 13-14. Sec., Dr. James M. Byrum, Mammoth Bldg., Shawnee.

OREGON: Portland, July 6. Sec., Dr. Urling C. Coe, 1208 Stevens Bldg., Portland.

PENNSYLVANIA: Philadelphia and Pittsburgh, July 6-10. Sec., Dr. Thos. E. Finnegan, State Capitol, Harrisburg.

RHODE ISLAND: Providence, July 1-2. Sec., Dr. Byron U. Richards, State House, Providence.

SOUTH CAROLINA: Columbia, June 22. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.

SOUTH DAKOTA: Deadwood, July 13. Sec., Dr. Park B. Jenkins, Waubay.

TENNESSEE: Memphis, Nashville and Knoxville, June 11-12. Sec., Dr. A. B. DeLoach, 1001 Exchange Bldg., Memphis.

TEXAS: Galveston, June 22-24. Sec., Dr. Thos. J. Crowe, Trust Bldg., Dallas.

UTAH: Salt Lake City, July 5-6. Sec., Dr. G. F. Harding, 405 Templeton Bldg., Salt Lake City.

VERMONT: Burlington, June 29-July 1. Sec., Dr. W. Scott Nay, Underhill.

VIRGINIA: Richmond, June 22-25. Sec., Dr. J. W. Preston, McBain Bldg., Roanoke.

WASHINGTON: Seattle, July 6-8. Sec., Dr. Wm. M. O'Shea, 305 Old National Bank Bldg., Spokane.

WEST VIRGINIA: Charleston, July 13. Sec., Dr. S. L. Jepson, Masonic Bldg., Charleston.

WISCONSIN: Milwaukee, June 29-July 1. Sec., Dr. John M. Dodd, 220 E. Second St., Ashland.

WYOMING: Cheyenne, June 7-9. Sec., Dr. J. D. Shingle, Cheyenne.

COOPERATION OF MEDICAL AND NURSING ORGANIZATIONS FOR THE SOLUTION OF NURSING PROBLEMS

The American Conference on Hospital Service at its meeting in Chicago, March 2, 1920, appointed a committee of seven, each representing a medical or nurse organization, to investigate causes of the shortage of nurses and to offer constructive criticism of present methods of training nurses. Physicians and nurses are asked to give the committee the benefit of their answers or opinions on any or all of the following questions:

(1) What is your opinion of the value of the three-year course for nurses connected with hospitals; the two-year course for nurses connected with hospitals; the high school prenursing courses; the Red Cross extension courses; short courses and correspondence nursing courses?

(2) Are the principles laid down in the nursing education in these courses right or wrong? If right, why does not present nursing education adequately meet the nursing need? If wrong, how should the training of nurses be made right?

(3) What use are the graduates of these various schools making of their training?

(4) What misuse are the graduates of these schools making of their training?

(5) What, if any, is the nurse wastage during training?

(6) What, if any, is the nurse wastage after finishing the course?

(7) What are some of the reasons for the shortage of nurses today?

(8) What suggestions can be made as to changes in the training which will make it efficient and yet not lower the nursing standard?

Replies should be sent to Louise M. Powell, Supt. School of Nursing, University Hospitals, Minneapolis, Minnesota. The answers will be classified and made a part of the committee's report to the American Conference on Hospital Service at its meeting in Montreal in October.

Wisconsin January Examination

Dr. John M. Dodd, secretary, Wisconsin State Board of Medical Examiners, reports the oral, written and practical examination held at Madison, Jan. 14-16, 1920. The examination covered 14 subjects and included 100 questions. An average of 75 per cent. was required to pass. Of the 14 candidates examined, 13 passed and 1 failed. Six candidates, including 1 osteopath, were licensed by reciprocity. Twelve candidates were licensed by virtue of a commission in the Medical Corps. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Chicago College of Medicine and Surgery		(1916)	84
Northwestern University		(1918)	85
Rush Medical College		(1919)	83, 83
Harvard University		(1818)	88
Columbia University		(1918)	86
University of Pennsylvania		(1918) 80, (1919) 84,	88, 89
University of Vermont		(1888)	88
University of Vienna		(1910)	80.6
University of Wurzburg		(1909)	85
	FAILED		
Chicago College of Medicine and Surgery		*(1916)	76.5

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Rush Medical College		(1915)	Iowa
Jefferson Medical College		(1918)	Penna.
McHarry Medical College		(1918)	Tennessee
McGill University		(1903)	N. Dakota
University of Christiania		(1902)	N. Dakota

College	ENDORSEMENT OF CREDENTIALS	Year Grad.	Endorsement with
Yale University		(1908)	U. S. Army
Rush Medical College		(1896), (1907)	U. S. Army
Northwestern University		(1905), (1910), (1915)	U. S. Army
University of Illinois		(1916)	U. S. Navy
Johns Hopkins University		(1917)	U. S. Army
National University of Arts and Sciences		(1913)	U. S. Army
University of Pennsylvania		(1911), (1917, 2)	U. S. Army

* Fell below 60 in one branch.

New Hampshire March Examination

Dr. Charles Duncan, secretary of the New Hampshire State Medical Board, reports the written examination held at Concord, March 11-12, 1920. The examination covered 8 subjects and included 80 questions. An average of 75 per cent. was required to pass. One candidate was examined and passed. Ten candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Columbia University		(1917)	80.6

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Hahnemann Med. Coll. and Hosp., Chicago		(1896)	Mass.
University of Kansas School of Medicine		(1918)	Kansas
Bowdoin Medical School		(1919)	Maine
Harvard University		(1895)	Mass.
Tufts College Medical School		(1911), (1914)	Mass.
Syracuse University		(1918)	New York
Jefferson Medical College		(1917)	Penna.
Woman's Medical College of Pennsylvania		(1901)	Penna.
University of Vermont		(1911)	Vermont

Book Notices

PRACTICAL ORTHODONTIA. By Martin Dewey, D.D.S., M.D. Fourth edition. Cloth. Price, $5.50. Pp. 532, with illustrations. St. Louis: C. V. Mosby Company, 1919.

The first edition of this work appeared in 1914. The present—the fourth edition—presents a revision and considerable enlargement of the third edition. The additions consist largely in the description of additional forms of appliances and their use. The work is avowedly devoted to the idea of multiplicity of forms of appliances, rather than to the idea of standardization and the mastery of the most efficient instrument. The attempt is made to describe all forms of appliances and their application, with critical analysis of their applicability. The book will be of special interest to the general practitioner who is doing some work in this field.

MANUAL OF SURGERY (ROSE AND CARLESS) FOR STUDENTS AND PRACTITIONERS. By Albert Carless, C.B.E., M.B., M.S. Colonel (Temp.), A. M. S. Tenth edition. Cloth. Price, $8. Pp. 1558. New York: William Wood & Co., 1920.

Five years have elapsed since the appearance of the ninth edition of this book. As with most standard textbooks now being issued, extensive revisions have been made, based on developments of the surgery of the war. Carless points out that the problem of determining the ultimate value in civilian work of the many methods introduced as war time emergencies has not been an easy one. There can be little question that some of these methods will pass away. He has thought best, however, to include in the present edition virtually all methods recently introduced. This, the author points out, has somewhat enlarged the size of the book, and thereby its price. The ninth edition contained 1,408 pages, while the tenth edition contains 1,558 and includes a large roentgenographic supplement. The book has however changed somewhat in form, the ninth edition having a page 9 by 6, the tenth edition, 8¾ by 5⅝. New work has been added in three chief directions: treatment of infected wounds; compound fractures, and in making good the defects of war wounds.

PHYSICAL RECONSTRUCTION AND ORTHOPEDICS. By Harry Eaton Stewart, M.D., Captain, Medical Corps, U. S. Army, Division of Orthopedics. Cloth. Price, $3.75. Pp. 275, with 64 illustrations. New York: Paul B. Hoeber, 1920.

This is a condensed manual with numerous well chosen illustrations designed to give expression to the author's ideas on these related subjects as developed from his experience in the gymnasium and in reconstruction work in the army. It tends naturally to the emphasis of massage, exercise and other forms of physiotherapy, and will be the more acceptable to those engaged in these and similar lines of work. Considerably more than half of the volume is devoted to orthopedics, briefly reviewing the usual orthopedic subjects and including fractures and dislocations of the long bones. A little more than one-half page is devoted to club-foot, and less than one-half page to congenital dislocation of the hip. Included in the congenital defects are rickets and coxa vara. From the orthopedic standpoint it is difficult to find just the yearning vacancy this volume will fill, as in its briefness it can only suggest treatment which no trained man needs and no untrained man can safely follow.

PRÉCIS DE BIOCHEMIE. Par E. Lambling, Professeur à la Faculté de Médecine de l'Université de Lille. Second edition. Paper, Price, 15 francs net. Pp. 708. Paris: Masson et Cie, 1919.

This edition of Lambling's Biochemistry has been entirely rewritten, and has been brought fairly well up to date. The new discussions include, among other points, a rather complete outline of the colloidal state and its influence on physiologic processes; chemical specificity of the tissues; formation of biliary calculi; the comparative alimentary value of proteins and the special nutritive rôle of the amino-acids; glycolysis; the metabolism of fats; the physiologic acidity of the urine; the importance of vitamins, and nitrogen metabolism during growth. The subject-matter of the text is written in a clear and concise style; and the discussions, although somewhat limited, are, nevertheless, adequate for the purpose. While little is presented that is not found in our own American textbooks on this subject, this work of Lambling should be found of value as collateral reading, especially for those who wish to obtain a working reading knowledge of French, as well as a concise discussion of the many points involved in the subject of biochemistry.

THE MODEL T FORD CAR, TRUCK AND TRACTOR CONVERSION SETS; ALSO FORDSON FARM TRACTOR AND F. A. LIGHTING AND STARTING SYSTEM CONSTRUCTION, OPERATION AND REPAIR. The Most Complete, Practical Treatise Explaining the Operating Principles of all Parts of the Ford Automobile, with Instructions for Driving, Maintenance and Repairing; also Complete Instructions on Fordson Tractor. By Victor W. Pagé, M.S.A.E. Cloth. Price, $1.50. Pp. 410, with 153 illustrations. New York: The Norman W. Henley Publishing Company, 1920.

This is a book for Ford owners: not for Packard, Winton, Pierce-Arrow or Marmon owners, but solely for Ford owners. Just why the flivver should have a book devoted entirely to it we do not know. Is it possible that it is because Hunka Tin is of more importance than all other motor cars? Or is it because it needs more attention than others? We hesitate to say. Be that as it may, here is a book of more than 400 pages devoted to practical information regarding this "universal car," and it should prove of practical value to those of us who are fortunate enough to own one.

Medicolegal

Implication from Collection of Hospital Fees

(*Courchesne v. Brown (Texas), 216 S. W. R. 674*)

The Court of Civil Appeals of Texas, in reversing, for insufficiency of proof, a judgment that was rendered in favor of plaintiff Brown, who sued to recover hospital expenses incurred by him after an attack of appendicitis while he was in defendant Courchesne's employ and had had $1 a month deducted from his wages as "hospital fees," says that the court found no case which it considered directly in point in which the issues presented here were discussed. In the cases examined, a hospital had already been furnished and was in use at the time of the collection of the hospital fees. Here the defendant had no hospital, and no custom was shown of his having furnished hospital service. The fund collected must be considered a trust fund. No method was shown for executing the trust, and the defendant was charged with the duty of administering it in such manner as would best accomplish the end for which it was accumulated; that is, to provide for the care of the sick employees who should come within the terms of the trust. Evidently the extent of the duty the defendant assumed in collecting the fund was to administer it properly. If the defendant had a hospital, the implication arising from the collection of the fees would be service at the hospital; but, having no hospital, the court thinks it would not necessarily be implied that he would furnish one. It was a matter of allegation and proof. The court thinks that if the defendant was liable for hospital service in the absence of a hospital of his own, or custom of having furnished hospital service, it would be necessary to allege and to prove that the defendant, as trustee, had on hand an unexpended portion of the trust fund which the plaintiff was entitled to have administered by the defendant in the discharge of the hospital services rendered. The defendant assumed no personal liability to the plaintiff beyond that of a proper and faithful administration of the trust fund. While the court thinks that the evidence was rather meager and unsatisfactory as to the purpose for which the funds were collected, beyond that it was for hospital fees, the court thinks that the evidence was sufficient to go to the jury on that issue. "Hospital fees" might mean that it was to provide a hospital, and it might mean that it was to be administered only in case of sickness. The court thinks, however, that, in the absence of a hospital owned or

subscribed to by the defendant, or custom to furnish hospital service, the evidence was wholly insufficient to raise the presumption that hospital service in a hospital not owned by the defendant was implied, or to justify a personal judgment against the defendant to supply hospital service. The burden was on the plaintiff, under the evidence and facts shown, not only to allege and show collection of fees, but the purpose and extent of the purpose for which the fees were collected as a present hospital fund to be used in case of sickness. It would necessarily follow that it must also be alleged and shown that the defendant had on hand a sufficient amount of the trust funds to which the plaintiff was entitled to pay the items of the account; otherwise the defendant would have nothing to administer, no duty to perform as trustee.

Irresistible Impulse Alone Not Defense to Crime

(State v. Carrigan (N. J.), 108 Atl. R. 315)

The Supreme Court of New Jersey, in affirming a conviction of murder in the first degree, holds that the trial judge did not err in refusing to charge the jury that if they found that there existed in the defendant's mind an irresistible impulse to take the life of the deceased, and the shooting took place under the influence of such an impulse, the defendant could not be convicted of murder in the first degree. The court says that the fundamental proposition embodied in the instruction was that an act done under an irresistible impulse cannot as a matter of law be wilful, deliberate and premeditated, within the meaning of the New Jersey statute defining murder in the first degree. The proposition is untenable. Conceding for the moment that the law recognizes the existence of an impulse which is irresistible as an element to be considered in determining the grade of a criminal homicide, the question in every case in which that element exists is whether the act was wilful, deliberate and premeditated, notwithstanding that its perpetration was the result of such impulse; and that question is clearly one of fact to be settled by the jury, for it involves the mental operations of the defendant, and they are not to be resolved by the arbitrary application of legal rules, but by a consideration of the facts and circumstances of the case which throw light thereon. The court thinks, also, that the requested instruction was properly refused on a broader ground. The court considers to be unsound the suggestion that the law recognizes a form of insanity in which the faculties are so affected that the person suffering from it, although he perceives and appreciates the moral quality of his acts, is unable to control them, and is urged by some mysterious pressure, which he cannot resist, to their commission. It may be that such a mental condition is recognized by medical or scientific authority; but the doctrine that a criminal act may be excused or mitigated on the notion of an irresistible impulse to commit it, when the offender has the mental capacity to appreciate his legal and moral duty in respect to it, has no place in the law.

State Antinarcotic Law Not in Conflict with Federal Act

(State ex rel. Whipple v. Martinson, Sheriff (Minn.), 174 N. W. R. 823)

The Supreme Court of Minnesota holds, in this habeas corpus case, that Chapter 260 of the laws of that state of 1915, restricting the manufacture, sale and dispensing of certain habit-forming narcotic drugs, as involved in the case of *State* v. *Whipple*, 173 N. W. R. 801, recently decided, does not conflict with the act of Congress known as the Harrison Narcotic Law, and that the judgment of conviction therein, of a violation of this chapter by Whipple, a physician, was not unlawful as violative of the paramount legislative power of the federal Congress or otherwise. The court says that, conceding, without considering or deciding the point, which it thinks of doubtful merit, that the right of legislation on the subject in hand is paramount in the federal Congress, and that the state statute is void so far as it conflicts with the act of Congress, the court is unable after careful examination and comparison of the two statutes to discover any conflict in the respect claimed.

Society Proceedings

COMING MEETINGS

American Assn. of Genito-Urinary Surgeons, Rochester, Minn., May 31.
American Climatological and Clin. Assn., Philadelphia, June 17-19.
American Medico-Psychological Assn., Cleveland, O., June 1-4.
American Ophthalmological Society, Hot Springs, Va., June 15-16.
American Orthopedic Association, Toronto, Ont., June 7-10.
American Otological Society, Boston, May 31-June 1.
American Pediatric Society, Highland Pk., Ill., May 31.
American Psychopathological Assn., Cleveland, O., June 5.
Arkansas Medical Society, Eureka Springs, June 8-9.
Association of American Peroral Endoscopists, Boston, June 1.
Canadian Medical Association, Vancouver, B. C., June 22-25.
Idaho State Medical Association, Coeur d'Alene, June 10-11.
Maine Medical Association, Augusta, June 29-30.
Massachusetts Medical Society, Boston, June 8-9.
Montana State Medical Association, Helena, July 14-15.
Nevada State Medical Association, Lake Tahoe, June 25-26.
New Jersey Medical Society, Spring Lake, June 15-17.
North Dakota State Med. Assn., Minot, June 15-16.
Ohio State Medical Association, Toledo, June 1-3.
Rhode Island Medical Society, Providence, June 3.
Southern Minnesota Medical Assn., Fairmont, Minn., June 28-29.

AMERICAN ASSOCIATION OF ANESTHETISTS

Eighth Annual Meeting, held at New Orleans, April 26-27, 1920

DR. ALBERT H. MILLER, Providence, R. I., in the Chair.

Some Anesthetic Relations

DR. A. H. MILLER, Providence, R. I.: The degree of danger attending the use of anesthetics is still unknown. The more postoperative deaths are studied the more evident it becomes that a considerable number may be traced directly or indirectly to the effects of anesthesia. The teaching of the science and practice of anesthesia in the medical schools and clinical hospitals has been neglected. In hospitals the preoperative examination of patients, the choice and the administration of anesthetics are all generally neglected. In many clinics only one agent and one method of administration is available and must be used regardless of the nature of the operation or the condition of the patient. In the larger institutions the present conditions may be remedied through the appointment of full-time, resident anesthetists. They should supervise the preliminary examination of the patients, consult with the surgical staff in regard to the choice of anesthetic agents and methods of administration, supervise difficult cases, instruct juniors in practical anesthesia and be responsible for the condition of anesthetic apparatus. While the anesthetists are trying to foster the literature of anesthesia, the larger medical and surgical journals are ignoring the subject. To remedy existing conditions it would seem advisable to encourage joint sessions of anesthetic societies with surgical associations with programs devoted to symposiums on pertinent subjects of common interest. A committee on statistics should be appointed to collect all available data and encourage private reports on fatalities. There should also be committees on instruction in medical schools and the standardization of anesthetic methods in hospitals.

Accidents During Anesthesia

DR. R. M. WATERS, Sioux City, Iowa: Anesthetic mortality is much higher than usually supposed. Recently, Dr. Stewart, of Cincinnati, compiled statistics of 10,700 operations for removal of tonsils and adenoids and found that twenty deaths had occurred in the series. The five deaths occurring under anesthesia in my own experience have taught me that every possible precaution must be taken in cases in which complicating disease has affected the heart muscle. Such patients under ordinary methods of anesthesia are apt to die unexpectedly. Patients may die of intense fear, and worry about and dread of the anesthetic may delay digestion so that vomiting under anesthesia may cause death

by the inspiration of vomitus into the trachea. In one instance a piece of meat lodged in the glottic entrance and caused death. The possibility of respiratory obstruction from inhaled vomitus is increased in the semireclining position and diminished in the forward inclined sitting posture or in the horizontal position with the head low. Obviously also more fatalities are bound to occur from accidents under anesthesia in emergency than in properly prepared patients.

Anesthesia in Experimental Surgery

F. C. MANN, M.D., Rochester, Minn.: Ether is the best anesthetic for use in most laboratory work. The reactions of the various species of experimental animals seem to be more uniform to ether than to any other general anesthetic. We have found the McGrath method of auto-inhalation, induced by preliminary etherization in an air-tight cabinet, very satisfactory for all purposes. The ether container may be the simple can with regulatory valves or more complicated devices such as the Adson-Little insufflation machine or the Connell anesthetometer. Smaller species of animals such as the guinea-pig, rabbit and cat are best anesthetized by the old-fashioned cone method, following preliminary etherization in a bell-jar. The goat is very susceptible to excessive salivary secretion under ether and unless given preliminary morphin-atropin and carefully anesthetized by intubation may drown in its own secretion.

Induction of Anesthesia and Analgesia by Oral Administration of Various Drugs

DR. A. FICKLEN, New Orleans: The problem of dressing extensive wounds has always presented difficulties to the surgeons on account of the pain inflicted on the patient. I use the following formula: Chloroform, 5 c.c., ether and liquid petrolatum, each 20 c.c. Recently I have found oral analgesia serviceable in the dressing of painful wounds, setting of fractures, skin grafting and other painful procedures in hospital practice. I have also collected seven cases in which the ether-chloroform-petrolatum mixture was used in obstetrics. The patients showed varying degrees of analgesia and light anesthesia. The mixture did not seem to diminish the contractions of the uterus even when the patients were asleep. Apparently there were no ill effects on the child. In one case tests showed the analgesia sufficient for repairing lacerations. Syrup of yerba santa, in 1 dram doses, helps to disguise the burning taste of the mixture to a certain extent.

Experimental Studies on Effects of Anesthetics in Shock

DR. MCKEEN CATTELL, Cambridge, Mass.: In the normal animal, ether, rapidly administered, causes a moderate fall in blood pressure, followed immediately by a recovery, so that by the time a degree of anesthetization is reached sufficient to cause a disappearance of the eye reflex, the pressure is normal. In shock the animal becomes very sensitive to ether, the same degree of anesthesia produced under exactly similar conditions resulting in a marked drop in blood pressure. An increased sensitiveness to ether is brought about by any circumstances which tend to depress the general condition of the animal, such as low blood pressure, hemorrhage, severe operation or the injection of acid into the circulation. In a shocked animal, sensitive to ether, nitrous oxid and oxygen may be given in the most favorable proportions so as to produce the same degree of anesthesia produced by ether without causing a fall in blood pressure. Experiments on the heart volume in intact cats and on contractions of the isolated turtle heart, together with deductions from blood pressure show that ether from the very beginning of its administration results in a depression of the heart and a decrease in its output, which is sufficient to account for the fall in pressure in both the normal and the shocked animal. Large doses of epinephrin injected intravenously in shocked animals usually results in the disappearance of the sensitiveness to ether for a period of an hour or more. The evidence indicates that epinephrin acts on the heart in a manner which antagonizes the effects of ether. Pituitary extract does not influence the pressure drop produced by ether in the shocked animal. Determinations of leg volume with a plethysmograph, perfusion experiments and results obtained from the injection of ether directly into the circulation, together with the form of the blood pressure curves, indicate that ether causes a contraction of the peripheral vessels in the normal animal. This constriction is caused by (a) a direct stimulation of the vasomotor center and (*b*) by a reflex to the fall in pressure resulting from depression of the heart. In shock no evidence of a vasoconstriction produced by ether was obtained, and pressor effects from asphyxia or sensory nerve stimulation become less or are entirely absent. The cause of the greater depressing influence of ether on the blood pressure in shock is a disturbance of the vasomotor system. The usual compensatory constriction no longer occurs to offset the decreased output of the heart, so that there is no recovery of the blood pressure during the inhalation of ether, but instead the pressure continues to fall.

Advances in Pure Nitrous Oxid-Oxygen Anesthesia

DR. E. I. MCKESSON, Toledo, Ohio: Primary saturation of the patient with nitrous oxid fails in some cases to produce sufficient relaxation for certain operations. Nitrous oxid produces muscular relaxation when it is sufficiently concentrated in the tissues and associated with enough oxygen to prevent anoxemic rigidity. High concentration of this gas in the tissue is required to displace the nonanesthetic diluting gases. Secondary saturation, following momentary deoxygenation, intensifies nitrous oxid anesthesia and produces sufficient relaxation for any operation. Secondary saturation is readily lost by subsequent errors in the mixture administered, leaks of air into the apparatus or the patients' air passages and probably by absorption of air through the abdominal cavity and skin requiring occasional resaturation in some cases. Its successful and safe employment depends on an apparatus capable of inflating the lungs with oxygen should the patient be crowded, intentionally or accidentally into spastic apnea. It depends also on an accurate interpretation of the signs of anesthesia, but disregarding the presence or absence of cyanosis as an anesthetic sign. Secondary saturation is not followed by postanesthetic sequels which are detrimental or which may be attributed to its use. It is safer for the patient than an ether sequence or combined gas-oxygen-ether and convalescence is better when even the small amount of combined ether is avoided.

Open Method of Nitrous Oxid-Oxygen Anesthesia

DR. JAMES T. GWATHMEY, New York: This method is offered as a substitute for the open-drop or any other method of etherization and also as an aid in anesthetizing certain patients to whom the closed method seems a burden. A mask twice the size of the usual drop-ether mask is used and is sufficiently large to hold a full inspiration of an adult. The mask is covered with several layers of gauze and scented with essence of orange or oil of bitter orange peel. The anesthetic is started with three holes of nitrous oxid and one of oxygen and in from 10 to 15 seconds the anesthetic valve is turned just enough to have the gases barely bubble through and from this on it is very gradually increased until there is a slight bead on top of the liquid. In one minute or one minute and a half the patient will be unconscious but not anesthetized. The technic from this on will vary with the substance that is to be used in connection with the gas-oxygen. Toward the close of the operation the patient is oxygenated for a short time before leaving the table.

Relaxants in Nitrous Oxid-Oxygen Anesthesia

DR. ANSEL M. CAINE, New Orleans: Nitrous oxid-oxygen would be the anesthetic of choice in all hazardous risks were it possible to secure adequate relaxation. Proper manipulation of the oxygen supply, slight positive pressure, warming the gases and preliminary medication as well as concomitant local analgesia all help in securing the desired degree of relaxation. In a certain number of cases, however, the addition of ether, chloroform or other anesthetic will be required. I have found chloroform a safe, efficient and pleasant adjunct to gas-oxygen anesthesia for relaxation.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia

February, 1920, **159**, No. 2

Epidemic Acute and Subacute Nonsuppurative Inflammations of Nervous System Prevalent in United States in 1918-1919: Encephalitis; Encephalomyelitis; Polyneuritis; and Meningo-Encephalo-Myelo-Neuritis. L. F. Barker, E. S. Cross and S. V. Irwin, Baltimore. p. 157.

Spinal Cord Tumors; Surgical Treatment. C. A. Elsberg, New York. —p. 194.

*Brachial Birth Palsy: Pseudoparalysis of Shoulder Joint Origin. T. T. Thomas, Philadelphia.—p. 207.

Sixth Nerve Paralysis of Otitic Origin: Gradenigo's Syndrome. Report of Two Cases. E. H. White, Montreal.—p. 227.

*Unusual Syphilitic Manifestation Resembling Juxta-Articular Nodules. H. Goodman, New York, and W. J. Young, Louisville.—p. 231.

*Congenital Absence of One Lung. C. S. Levy, Baltimore.—p. 237.

*Secondary Meningitis Treated by Intraspinous Administration of Autogenous Serum. Report of Case. T. M. Sanders, New York. —p. 246.

Colloidal Gold Reaction with Cerebrospinal Fluid. E. Kellert, Albany. —p. 257.

*Preparation of Stable Vitamin Product and Its Value in Nutrition. H. E. Dubin and M. J. Lewi, New York.—p. 264.

Brachial Birth Palsy.—Thomas maintains that obstetric or brachial birth palsy represents only one phase of a much larger shoulder joint problem. Almost, if not all, shoulder joint injuries are associated with a brachial paralysis, palsy or weakness of varying degree and duration. Very rarely will an actual nerve rupture be associated with the paralysis. Thomas doubts that sufficient traction on the head at birth to rupture the brachial plexus has ever been applied in a successful delivery.

Multiple Gummas of Tendons.—A case of multiple and symmetrical gummas of the tendons is described by Goodman and Young which clinically closely resemble the tumors of juxta-articular nodules. The suggestive history, positive Wassermann, and histology of one of the lesions puts the diagnosis of multiple syphilitic gummas of the tendons on a sound basis.

Congenital Absence of One Lung.—Twenty-one cases of congenital absence of one lung are reported in the literature. There are, in addition to these reports, four cases in the literature where a possible rudimentary lung has been found covering an imperfectly developed primary bronchus. An additional case is recorded by Levy, one of congenital absence of one lung in a patient who was treated for the urinary incontinence of tabes dorsalis. The patient was 49 years old. This is the first case of congenital absence of one lung in almost 6,000 necropsies performed in the pathologic department of the Johns Hopkins Hospital.

Autogenous Serum in Meningitis.—Sanders recommends the use of autogenous serum injected into the subarachnoid space in cases of secondary meningitis when there is no efficient specific immune serum.

Stable Vitamin Product.—Dubin and Lewi prepared a stable vitamin product, designated, "V." An analysis shows the chief components to be calcium, expressed as calcium oxid, 10 per cent.; phosphorus, 15 per cent.; nitrogen, 3.5 per cent.; fat, 2.5 per cent.; iron, 0.3 per cent.; silicates 5.6 per cent.; moisture, 10 per cent. The remainder goes to make up the rest of the phytin molecule—the main constituent of the product—which is a double calcium and magnesium compound of inosite phosphoric acid. Owing to the method of preparation and to the results of experiments with normal and polyneuritic pigeons, normal and scorbutic guinea-pigs and finally with children presenting evidence of malnutrition, marasmus and rickets—a marked acceleration in the rate of growth having been obtained, particularly in the children—it is established that the product contains antineuritic, antiscorbutic and antirachitic vitamins. It is felt by the authors that until such time as the vitamins shall have been isolated and their chemical composition determined, their vitamin preparation is an admirable substitute and may be used with confidence in such a manner as described by Voegtlin. It is not intended as a substitute for any method of treatment nor is it meant to be used in infant feeding only. Rather is it intended to be a valuable aid whenever its use is indicated. At the same time, it should not be lost sight of that the diet must contain sufficient protein, fats, carbohydrates and mineral salts and that the caloric value must be adequate for the needs of the individual.

American Journal of Syphilis, St. Louis

April, 1920, **4**, No. 2

*Syphilis of Central Nervous System. G. O. Scott and G. H. J. Pearson. C. A. M. C.—p. 201.

Medical and Social Care of Syphilis at Washington University Dispensary. R. S. Weiss and A. H. Conrad, St. Louis.—p. 253.

Standardization of Wassermann Reaction. Comparative Study of Complement Fixation in Syphilis with Antihuman, Antichicken and Antisheep Hemolytic Systems. J. A. Kolmer, T. Matsunami and A. Rule, Philadelphia.—p. 278.

*Wassermann Control in Treatment of Syphilis. J. C. Sargent, Milwaukee.—p. 286.

*Wassermann Reaction as Therapeutic Index for Syphilis. B. Oettinger, Long Beach, Calif.—p. 297.

Colloidal Mastic Test on Cerebrospinal Fluid. C. D. Camp, Ann Arbor.—p. 301.

Syphilitic and Tuberculous Joints. P. W. Roberts, New York.—p. 309.

*Lymphsarcoma and Syphilis. O. Berghausen, Cincinnati.—p. 317.

*Syphilis of Prostate. L. Thompson, Hot Springs, Ark.—p. 323.

*Syphilis in Pregnancy and Labor. E. L. Cornell and A. W. Stillians, Chicago.—p. 342.

Ocular Syphilis and Its Treatment: Report of Cases. W. J. Young, Louisville.—p. 346.

Standardization in Treatment of Syphilis. B. C. Corbus, Chicago. —p. 353.

Intraspinal Injections in Neurosyphilis.—This paper is based on an analysis of 210 cases of neurosyphilis and many important points are discussed and illustrated by reports of cases. One of the points emphasized by Scott and Pearson is that intraspinal injections are not only of use in the treatment of neurosyphilis but are also an aid to diagnosis. The introduction of a small dose of arsphenamized serum into the spinal canal sets up a reaction analogous to the Herxheimer reaction in that, if syphilitic infection is present, the liberated toxins from the destroyed *Spirochaeta pallida* increase the inflammatory reaction and so cause the positivity of the fluid to increase. By this reaction, if a case is suspected from clinical indications to be neurosyphilis but is serologically negative, an injection of a small dose of arsphenamized serum may render the fluid positive.

Wassermann Control in Treatment of Syphilis.—Sargent's experience with inherited syphilis treated by both arsphenamin and mercury has been limited to about a dozen cases. It has been sufficient, however, to warrant the conclusion that it is worth while attempting to cure them. From these few cases it has seemed that they react to treatment in about the same way as do adults with acquired syphilis of many years' duration. In Sargent's opinion the Wassermann offers an excellent control in the treatment of syphilis, but only, however, when taken in consideration with the physical findings and with the past history of the patient, including the amount of his treatment. Wassermann positive primary syphilis cannot be cured by a few injections of arsphenamin and a few months of mercury, but when treated intensively and over a long period, offers an excellent prognosis. There seem good grounds for the belief that many cases of secondary and tertiary syphilis, even of years' duration, when treated intensively both with arsenic and mercury for one, two or three years can be rendered Wassermann negative and apparently cured. In at least some cases of early tabes it is possible to render both the blood and spinal fluid negative to the various clinical tests.

Id.—Enough time has elapsed since the introduction of the Wassermann reaction and comparison of its readings with associated clinical aspects, Oettinger says, to prove that this test is not a reliable guide for treatment.

Lymphosarcoma and Syphilis.—Two cases of association of these two diseases are reported by Berghausen. In the first case, the general enlargement of the lymph glands was marked, but the marked enlargement of the spleen and abdominal lymph glands made the clinical diagnosis of lymphosarcoma rather easy. In the second patient the enlargement of the peripheral glands was so marked, involv-

ing chiefly the glands of the neck at first, that the probable diagnosis of Hodgkin's disease was made. In both instances there was no question as to coexistence of syphilis; the patients admitted specific infection and the blood Wassermann reaction was strongly positive to different antigens. Antispecific treatment was only of temporary benefit, proving of some value in the second patient, causing a decrease in the size of the glands of the neck but not preventing the gradual invasion of the entire lymphatic system.

Syphilis of Prostate.—Only twenty-four cases purporting to be syphilis of the prostate have been recorded in the literature, and of these only twelve, or 50 per cent., are accepted as authentic. Thompson adds one case in which the diagnosis is said to be indisputable.

Syphilis in Pregnancy.—Of sixty-nine pregnant women tested by Cornell and Stillians for syphilis, two gave a strongly positive and one a slightly positive reaction. Eighteen out of the sixty-nine cases gave a history of abortion or stillbirth aside from one case which was syphilitic. This is a percentage of 26. Of the three syphilitics, one had aborted.

Archives of Internal Medicine, Chicago

April 15, 1920, **25,** No. 4

*Studies on Arthritis in Army Based on Four Hundred Cases. IV. Relation of Creatin Metabolism to Arthritis. R. Pemberton, Philadelphia, and T. E. Buckman, Boston.—p. 335.
*Id. V. Roentgen-Ray Evidences, Clinical Considerations, Treatment, Summary, Conclusions and Clinical Abstracts of Cases Studied. R. Pemberton, Philadelphia.—p. 351.
*Research on Blood Sugar in Depancreatized Dogs. B. J. Delatour, New York.—p. 405.
*Prognostic Value of Cholesterinemia in Chronic Nephritis. Final Report. E. Henes, Milwaukee.—p. 411.
*Unusual Mechanisms of Auricular Pacemaker. P. D. White, Boston. —p. 420.
*Fetid Spirillar Bronchitis and Pulmonary Gangrene. P. Nolf, Brussels, Belgium.—p. 429.

Relation of Creatinin Metabolism to Arthritis.—Determinations of the creatin, creatinin and nonprotein nitrogen of the blood and urine of forty cases of arthritis and nine normal controls are presented by Pemberton and Buckman. About one half of the cases of arthritis showed an abnormally high value for blood creatin. A certain number of patients showed a decline in blood creatin simultaneous with clinical improvement. Only three of the cases showed creatinuria. Only two cases showed an abnormal elevation of nonprotein nitrogen of the blood. Figures are presented which suggest that a considerable amount of creatin is occluded in the precipitation of the proteins of whole blood and plasma.

Restricted Carbohydrate Diet in Arthritis.—The value of the treatment of these arthritis patients by a restricted carbohydrate diet finds additional support in the studies on blood sugar, revealing a difficulty in the utilization of carbohydrate. It seems clear that success following this measure depends on catering to a weakened function of which the lowered sugar tolerance is one evidence. Treatment along this line has undoubted application in appropriate cases of chronic arthritis. Pemberton urges that the several measures of value in arthritis should be combined in their application more frequently. The tendency to focus on one measure often results in failure where the subsequent coincident use of several measures results in benefit.

Hyperglycemia Following Removal of Pancreas.—Complete removal of the pancreas in Delatour's dogs produced a permanent hyperglycemia, and any part of the pancreas left in the animal after operation later manifested itself by a fall in blood sugar. Epinephrin administered by intravenous injection in normal dogs increased the blood sugar. With the pancreas removed, epinephrin produced very little, if any, change in the blood sugar. Under this condition, as a possible explanation, sugar is passing freely into the circulation unburnt, and therefore the epinephrin can have very little further effect in increasing the blood sugar by inhibiting sugar metabolism. Delatour regards it as reasonable to believe that the pancreas produces some substances which favor the metabolism of the sugars in the tissues, as sugar injected intravenously is not handled as readily in the depancreatized animal as in the normal dog.

Rôle of Lipoids in Blood.—It is Henes' belief that the lipoids of the blood play a rôle analogous to an antitoxin, and are intimately associated in immunologic processes. The lipoids seem to act as a protection to the animal organism, and are known to counteract certain poisonous substances. Recent literature abounds in substantiation of the belief that cholesterol plays some protective rôle in the animal organism. The prognostic value of the measure of cholesterinemia in chronic nephritis becomes of greater interest and importance because of these facts.

Unusual Mechanism of Auricular Pacemaker.—Three clinical examples of unusual mechanism of the auricular pacemaker are reported by White: (1) Paroxysmal tachycardia arising in or very near the sino-auricular node and not showing an absolutely abrupt onset or offset. (2) Migration of the pacemaker in the sino-auricular node, two foci alternating action in one case. (3) Sudden halving of the auricular rate (sino-auricular block) after exercise.

Spirillar Bronchitis.—It would appear from Nolf's study of eleven cases that spirillar bronchopneumonia is a malady of temperate climes, and that it has probably been confounded up to the present time with pulmonary gangrene consecutive to acute or chronic affections of the respiratory tract. Its micro-organism is probably a common inhabitant of the upper respiratory passages, particularly of the mouth and pharynx.

Boston Medical and Surgical Journal

April 22, 1920, **182,** No. 17

Helen Homans. F. A. Washburn, Boston.—p. 417.
Intestinal Obstruction: Report of Cases. E. A. Codman, Boston.—p. 420.
Supporting Pelvic Floor to Prevent and Overcome Uterine Prolapse. D. W. G. Wilcox, Boston.—p. 425.
Loss of Both Eyes from Exophthalmos of Hyperthyroidism. F. H. Lahey, Boston.—p. 427.
Résumé of Literature of Infantile Scurvy During 1918 and 1919. J. L. Morse, Boston.—p. 428.

May 13, 1920, **182,** No. 20

Disturbances Caused by Proteins. J. A. Turnbull, Boston.—p. 493.
Use and Abuse of Mechanical Supports in Orthopedic Conditions. H. W. Marshall, Boston.—p. 497.
Report of Urologic Cases. W. C. Quinby, Boston.—p. 502.

Journal of Infectious Diseases, Chicago

March, 1920, **26,** No. 3

*Statistics of 1918 Epidemic of Influenza in Connecticut, with a Consideration of the Factors which Influenced the Prevalence of this Disease in Various Communities. C. E. A. Winslow and J. F. Rogers, New Haven, Conn.—p. 185.
Bacterium Anatum, N. S., Etiologic Factor in Widespread Disease of Young Ducklings Known in Some Places as 'Keel.'' L. F. Rettger and M. M. Scoville, New Haven, Conn.—p. 217.
*Grouping of Influenza Bacillus by Specific Agglutination. J. C. Small and G. K. Dickson, St. Louis.—p. 230.
*Chemotherapeutics of Chaulmoogric Acid Series and Other Fatty Acids in Leprosy and Tuberculosis. E. L. Walker and M. A. Sweeny, San Francisco.—p. 238.
*Experimental Streptococcus Empyema. Attempts at Prevention and Therapy by Means of Vaccines and Serum. F. P. Gay and R. L. Stone, Berkeley, Calif.—p. 265.

Influenza Epidemic.—A study of the census statistics for the larger cities of the United States as a whole, made by Winslow and Rogers, showed a very definite relation between the severity of the 1918 epidemic and both the pneumonia death rate and the total death rate for the sixteen years preceding. The relationship is, in general, a geographic one, the Eastern and Southern cities showing high death rates, the Middle Western and Western cities showing low death rates in each case. In the Eastern section the results are attributed to unfavorable economic conditions associated with industrial life and the presence of certain foreign race stocks always characterized by a high death rate.

Grouping of Influenza Bacillus.—Four groups have been identified by Small and Dickson and 70 per cent. of the strains studied fall into two groups. They maintain that the hemophilic organisms (*B. influenzae*) can be grouped by immunologic methods.

Antiseptic and Bactericidal Actions of Chaulmoogra Oil.—This report is concerned exclusively with a study of the antiseptic and bactericidal actions of chaulmoogra oil and is constitutents, the identification of the specificity of its bac-

tericidal action for acid-fact bacilli, and an investigation of the presence or absence of this bactericidal substance in cod liver and other oils. Walker and Sweeney state that chaulmoogra oil contains bactericidal substances that are about one hundred times more active than phenol. They are the fatty acids of the chaulmoogric series, chaulmoogric and hydnocarpic acids, and possibly lower isomers of this series. The bactericidal activity is specific for the acid-fast group of bacteria only. The fatty acids of cod liver oil do not possess the specific activity of the chaulmoogric oil series. The authors' experiments do not support the claim of Rogers for sodium morrhuate in the specific therapy of tuberculosis but their findings do supply a scientific basis for the use of chaulmoogra oil and its products in leprosy.

Experimental Streptococcus Empyema.—According to the results obtained by Gay and Stone, experimental streptococcus empyema in rabbits may be prevented by previous immunization with killed, followed by living, cultures of the same strain of streptococcus, but only when repeated vaccinations have been practiced and in a total amount which would seem to preclude the practicability of such a preventive inoculation in human beings, provided the conditions are similar. Attempted vaccine therapy of the localized symptoms has given consistently negative results.

April, 1920, **26,** No. 4

*Streptolysin. P. H. DeKruif and P. M. Ireland, Ann Arbor, Mich. —p. 285.
Influence of Thorium X on Antibody Formation. L. Hektoen and H. J. Corper, Chicago.—p. 330.
*Bacillus of Colon-Typhoid Group Isolated from Case of Furunculosis. W. W. Oliver and A. F. Schwab, Brooklyn.—p. 336.
Paratyphoid Bacilli Recently Isolated from Animals. R. B. Spray, Lafayette, Ind.—p. 340.
Intracellular Protozoan Parasite of Ducts of Salivary Glands of Guinea-Pig. L. Jackson, Chicago.—p. 347.
Causes for Variation in Determinations of Disinfecting Values. B. Fantus and F. Rumry, Chicago.—p. 351.
Chemotherapeutic Studies with Ethylhydrocuprein and Mercurophen in Experimental Pneumococcus Meningitis in Rabbits. J. A. Kolmer and G. Idsumi, Philadelphia.—p. 355.

Streptolysin.—Hemolysin production in serum broth by beta hemolytic streptococcus was studied by de Kruif and Ireland. The data gleaned have been used in the synthesis of a new blood agar plate.

Colon-Typhoid Group Bacillus in Furunculosis.—From a pure culture of this organism, Oliver and Schwab made an autogenous vaccine. Following the initial injection of minim (about one-half billion bacilli per cubic centimeter) the patient exhibited marked local and general reaction. As a result of this treatment, the patient was free from boils for almost two years. In the opinion of the authors this suggests a relationship of the bacillus to the disease. The organism and its life history are described in detail.

Medical Record, New York

May 8, 1920, **97,** No. 19

Poisonous Sumachs; Rhus Poisoning; Remedies. W. L. Macatee, Washington, D. C.—p. 771.
Poise or Tranquillity a Necessary Condition of Economic Repair. J. M. Taylor, Philadelphia.—p. 780.
Rôle of Neurones. J. H. Dowd, Buffalo.—p. 784.
*Hyperchlorhydria; Frequent Causes of Defective Appetite in Children. J. H. Kerley, New York.—p. 786.
Philosophy of Human Sympathy. J. C. Bateson, Scranton.—p. 787.
Compulsion Neuroses (Obsessions, Doubts and Phobias). H. Laveson, New York.—p. 790.

Hyperchlorhydria Causing Poor Appetite.—Kerley maintains that a common cause of defective appetite in children of the runabout age, or older, is hyperchlorhydria, with the resulting symptoms of variable desire for food, indefinite abdominal pains, flatulency, and acid eructations. The treatment consists of giving alkalies to neutralize the excess of acids, of substituting an easily digestible, nonirritative diet, and of giving due attention to general hygienic measures.

May 15, 1920, **97,** No. 20

Lethargic Encephalitis. E. L. Hunt, New York.—p. 815.
Prevention of Respiratory Diseases in Infancy and Early Childhood. J. Sobel, New York.—p. 817.
*Skin as an Index to Health. M. Scholtz, Los Angeles.—p. 824.
Treatment of Splanchnic Relaxation by Electrical Currents. W. Martin, Atlantic City, N. J.—p. 828.
*Acute Intussusception; Report of Case Relieved by Enema. S. K. Levy, New York.—p. 831.
*Case of Delayed Postoperative Hemorrhage Following Tonsil and Adenoid Removal. E. V. Hubbard, New York.—p. 832.

Skin as Index to Health.—Scholtz points out that in many conditions the skin lesion is merely a manifestation of a general disease, therefore the closest cooperation between internist and dermatologist is both essential and of value. Such cooperation would help the dermatologist as much as the clinician, because in the absence of thorough systemic examination many patients receive only symptomatic relief.

Acute Intussusception.—Levy pleads for less haste in adopting radical methods in these cases, especially when they are seen early. In the case reported, he gave an enema of 1 quart of sterile water very slowly with relief of the intussusception. He advises not to elevate the container more than 6 feet.

Delayed Postoperative Hemorrhage After Tonsillectomy.—The tenth night after operation, Hubbard's patient had a profuse hemorrhage from the mouth, her condition prior to that time having been wholly satisfactory.

Neurological Bulletin, New York

October, 1919, **2,** No. 10

General Consideration of Cranial Nerves. H. A. Riley, New York. —p. 361.
Case of Epidemic Polioencephalitis with Ticlike Movements. G. C. Andrews, New York.—p. 370.
Marie's Heredo-Cerebellar Ataxia: Report of Case. M. Osnato, New York.—p. 372.
Limitations of Tinel's Sign in Peripheral Nerve Injuries. B. Stookey, New York.—p. 380.
Case of Progressive Spinal Muscular Atrophy. R. A. Gerber, New York.—p. 385.

New Jersey Medical Society Journal, Orange

April, 1920, **17,** No. 4

Common Diseases of Rectum. D. B. Pfeiffer, Philadelphia.—p. 109.
Conservative and Reconstructive War Surgery. R. E. Soule, Newark.—p. 112.
Importance and Use of Biologic Products in Public Health Work. J. F. Anderson, New Brunswick.—p. 117.
Clinical Résumé of Influenza in Recent Epidemic. F. C. Horsford, Newark.—p. 121.
Is He a Malingerer? A. C. Ruoff, West Hoboken.—p. 124.

New Orleans Medical and Surgical Journal

April, 1920, **72,** No. 10

Experience with Shock and Hemorrhage. S. C. Jamieson, New Orleans.—p. 584.
Suggestions in Physical Diagnosis. O. W. Berhea, New Orleans. —p. 591.
Specimen of Tubal Pregnancy. F. L. King, New Orleans.—p. 594.
Spinal Analgesia. S. P. Delaup, New Orleans.—p. 595.

New York Medical Journal

May 8, 1920, **111,** No. 19

Acidosis: Its Mechanism, Recognition, and Clinical Manifestations. G. M. Piersol, Philadelphia.—p. 793.
Drugless Therapy of Diabetes. H. S. Stark, New York.—p. 800.
Limitation of Starvation in Diabetes Mellitus. T. W. Edgar, New York.—p. 803.
Advantages of Class Instruction in Treatment of Diabetes. N. W. Janney, Santa Barbara, Calif.—p. 806.
History of Diabetes Mellitus. P. Horowitz, New York.—p. 807.
Case of Diabetes Insipidus. T. G. Schnabel and A. H. Gerhard, Philadelphia.—p. 812.
Diabetes in Association with Toxic Goiter. J. C. O'Day, Honolulu. —p. 815.
Obligations of Medicine in Relation to General Education. W. C. Braisted, Washington, D. C.—p. 817.

May 15, 1920, **111,** No. 20

Influenza as Pulmonary Necrotic Alveolitis Involving Endocrines. C. E. DeM. Sajous, Philadelphia.—p. 837.
*Experiments with Transmitting Influenza Through Fleas. C. Engelbreth, Copenhagen.—p. 846.
*Acute Indigestion. B. Robinson, New York.—p. 848.
Gastric Disturbances in Appendicular Inflammation. S. Floersheim, Los Angeles.—p. 849.
Outbreak of Diphtheria in Small City. I. W. Brewer, Watertown, N. Y.—p. 849.
Group Diagnosis. J. Gutman, Brooklyn.—p. 851.
Relation of Neurologist to Group Diagnosis. C. Rosenheck, New York.—p. 855.
Heredity. L. D. McEvoy, New York.—p. 858.
Medical Opportunities for Women in Japan. C. F. Furness, Poughkeepsie, N. Y.—p. 860.

Transmitting Influenza Through Fleas.—Engelbreth conducted experiments on human beings. Fleas were allowed to bite persons suffering from undoubted influenza, and some with a complicating pneumonia, and, then, these fleas were placed on the skin of normal persons. In one half of the fourteen experiments made the result was negative. The author suggests that, perhaps, the fleas used had not been infected or that the infection in them had run out. Infected fleas died much more quickly than uninfected fleas. In the positive cases, the symptoms were those of a mild influenza, such as occurs for the most part in epidemics of this disease, and without complications, except in one case in which pneumonia developed.

Acute Indigestion.—The cases of death from "acute indigestion" reported by the lay press Robinson says are really not such at all. The cause of death in these cases is primarily an overstrained, weakened heart, already diseased, or a cerebral hemorrhage, a weakened circulation with diseased arteries causing stasis in the vessels of the brain. He regards the use of strophanthus, a hypodermic tablet placed under the tongue, as the best treatment in these cases.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Brain, London

January, 1920, **42**, No. 4

Suggestion and Suggestibility. E. Prideaux.—p. 291.
*Lethargic Encephalitis; Sequels and Morbid Anatomy. E. F. Buzzard and J. G. Greenfield.—p. 305.
*Local Paralysis Following Superficial Injuries not Involving Nerve Trunks: Traumatic "Ascending Neuritis" and 'Reflex Paralysis." F. M. R. Walshe.—p. 339.

Lethargic Encephalitis.—In the opinion of Buzzard and Greenfield there is no reason to suppose that lethargic encephalitis is a new disease; endemic cases occur from time to time. Cases of patients suffering from symptoms of acute or subacute cerebral disease have been diagnosed as cerebral hemorrhage, and in others a diagnosis has never been properly established. A detailed report is given of twenty cases, and the pathologic findings in five fatal cases are described. The histologic appearances of the brains examined were very varying. But there were certain features common to all cases in the early stages. They are: (1) vascular congestion; (2) evidence of toxic degeneration of the nerve cells and neuronophagy; (3) proliferation of the mesoblastic cells of the vessel walls, and infiltration of the nervous tissue with these cells; (4) small celled infiltration of the Vichow-Robin space and (5) glial proliferation. They are given in the order in which they occur most constantly.

Traumatic Ascending Paralysis.—Four cases are analyzed by Walshe. They show that a trivial injury, not necessarily a wound and not involving a nerve trunk, may produce marked paresis, or paralysis, with wasting of muscles and diminution of their faradic excitability, impairment of the corresponding tendon jerk, subjective and objective sensory changes and vasomotor disturbances. These signs have a definite anatomic topography and correspond to the innervation of a peripheral nerve. The character of the symptoms is that of a localized neuritis (mononeuritis). Though in every instance progressive, there was evidence of continued upward extension in only one case. In every instance, the injury was within the territory innervated by the affected nerve, though not involving its trunk. In two cases the cutaneous endings of the nerve had been directly injured. In one it overlaid these, while in one case it involved both deep and cutaneous afferent endings. Sepsis does not appear to have been an essential factor. It is clear that in these cases there is an organic disturbance of structures anatomically related. They approximate in type to the conditions known as "ascending neuritis," rather than to the muscular reflex affection of acute arthritis and allied lesions. Walshe suggests that a small proportion of Babinski's cases of "reflex nervous disorders" may have been of the same nature.

British Medical Journal, London

March 20, 1920, **1**, No. 3090

Elements of Psychoneuroses. H. Head.—p. 389.
Nature, Prevention and Treatment of Heat Hyperpyrexia. W. H. Willcox.—p. 392.
Id. L. Hill.—p. 397.
*Dietetic Treatment of Diabetes Mellitus. R. T. Williamson.—p. 399.
*Nephritis: Abdominal Hemorrhage: Death. J. E. Blomfield.—p. 400.
Case of Acute Yellow Atrophy of Liver. E. C. Whitehead.—p. 400.
Tuberculous Cow. J. E. Scales.—p. 400.

Dietetic Treatment of Diabetes Mellitus.—In cases uncomplicated by "acidosis" and certain other secondary affections, when the ordinary restriction of carbohydrates in the diet fails promptly to check the glycosuria, Williamson advises complete rest, and for seven days a diet composed of a mixture of casein, cream and water, given every two hours, from 8 a. m. to 10 p. m., without any soiled food. In many cases this diet promptly checked the glycosuria when other treatment had failed. At the end of the seven days a change is gradually made to a suitable solid diet, the amount of carbohydrates which the patient could tolerate being carefully noted. During the war period, in place of casein and cream solution, Williamson often used a diet composed chiefly of eggs and milk, given every two hours for seven days, or a diet chiefly of suitable vegetables and jelly. Both of these are more palatable, and are often useful, but not so frequently successful as the casein and cream solution. At the end of the war period, the casein obtainable was very often unsatisfactory in taste and odor, and Williamson has recently employed, with great success in many cases a mixture and course of treatment, which can be easily carried out. The mixture is a useful substitute for the casein and cream solution. If "acidosis" and other serious complications can be excluded, and if an ordinary diabetic diet, with restriction of carbohydrates, fails to check the glycosuria promptly, then the patient is advised to rest on the sofa for seven days (or for a shorter period) and to make a mixture of eggs, cream and water, prepared as follows: Three eggs are beaten up with 3 ounces of cream and a little water. More water is then added gradually until the mixture measures 4 pints. Of this mixture the patient takes half a pint every two hours, from 8 a. m. to 10 p. m. In addition, he takes coffee or tea at 8 a. m. and 4 p. m., and also beef tea (warm), half a pint at 12 noon, 6 p. m. and 10 p. m. No bread, no meat, and no other foods are taken during this period. In many cases the glycosuria is promptly checked in from four to seven days. This diet is not continued longer than seven days, and is then slowly changed to a solid diet containing only a small amount of carbohydrate food, the amount of bread and other carbohydrates which can be tolerated being carefully noted.

Nephritis with Abdominal Hemorrhage.—A woman presented symptoms which led Blomfield to make a diagnosis of influenza. Her main complaint was pain in the lumbar region. She improved somewhat under treatment but this back pain continued. The urine contained blood and albumin. The temperature was slightly elevated above the normal. Suddenly she had a "collapse" and died. At the necropsy the peritoneal cavity was found filled with blood and blood clots for which no source could be discovered. The heart was hypertrophied and the walls of the left ventricle were much thickened. At the right edge of the liver was a mass the size of the palm of the hand, resembling a blood clot. There was blood behind the peritoneum near the right kidney and petechial spots on the mesentery. There was also blood tracking up behind the peritoneum and into the thorax. Blomfield believes that this was a case of acute nephritis grafted on a chronic condition which caused a hemorrhagic diathesis.

Lancet, London

April 17, 1920, **1**, No. 5042

Ambulatory Treatment of Fracture of Limbs: Tuberculous and Arthritic Disease of Joints. C. A. Hoefftcke.—p. 28.
Higher Fungi in Relation to Human Pathology. Aldo Castellani.—p. 29.
"Heart" Cases in Egyptian Expeditionary Force. A. L. Krogh, W. T. Ritchie and E. H. White.—p. 852.
Accessory Food Factors (Vitamins) in Feeding of Infants. Edward Mellanby.—p. 856.

Relation of Lipochrome Pigments to Fat-Soluble Accessory Food Factor. O. Rosenheim and J. C. Drummond.—p. 862.
*Treatment of Bilharzia Disease with Tartar Emetic in South Africa. F. G. Cawston.—p. 865.
*Blood Transfusion Before Operation in Severe Secondary Anemias. Herbert Williamson.—p. 867.
Medical Problems of Life Assurance. T. D. Lister.—p. 892.

Tartar Emetic in Bilharziasis.—The experience Cawston has gained from watching a series of cases shows that the scalding and vesical pain that these patients complain of may be expected to disappear after the second or third intravenous injection. The patient will probably remark on the disappearance of the blood from the urine within a week or ten days, though hematuria may be prolonged where there is a tendency to papillomatous growths. Degenerating maricidia may be seen within the shells of the eggs shortly after the dose administered has reached a full grain. Blackened eggs may appear after a total of 1¼ grain has been given. Free swimming, dying maricidia are not uncommon in undiluted urine at the end of the two weeks' treatment. A cloudy condition of the urine due to phosphates is common during the second or third week, and readily responds to treatment. The disease is usually cured when the urine has been free from living eggs for a fortnight or three weeks. The presence of many dead eggs and blood cells indicates that further treatment is required. The absence of living eggs for a month indicates that the female parasites are all dead. If the parasites are going to cause mischief again, they are unlikely to take more than a fortnight to three weeks to recover after the treatment has ceased.

Blood Transfusion in Secondary Anemia.—A case of anemia caused by a uterine fibromyoma in which blood transfusion was resorted to, is reported by Williamson. He says that in the future he will do this before operating for fibromyoma so as to diminish the risk of the operation, lessen the liability to thrombosis, and shorten the period of convalescence. He proposes also, when the patient is very anemic, to adopt this procedure in cases of carcinoma of the cervix before performing Wertheim's operation. He suggests further that blood transfusion should be performed before delivery in cases of severe antepartum hemorrhage.

Tubercle, London

November, 1919, **1**, No. 2

*Effect of Occupation on Incidence of Pulmonary Tuberculosis. E. L. Collis.—p. 49.
Prognosis in Tuberculosis. F. Kraus.—p. 56.
*Case of Pneumothorax. N. Robertson.—p. 64.

Effect of Occupation on Tuberculosis Incidence.—Collis maintains that the evidence he adduces proves that there is a type of phthisis which causes death in middle age—that time of life when the effect of occupation has had time to make its impress on the human organism; and that industrial life in some way directly promotes its incidence.

Pneumothorax.—The case reported by Robertson is interesting and unusual because the commencement of the disappearance of pneumothorax signs on the right side was coincident with the appearance of air in the subcutaneous tissues on the left side. Simultaneously the pressure symptoms subsided and the temperature fell. The tissues on the left side were quite definitely crepitant to touch exactly as in a case of surgical emphysema.

December, 1919, **1**, No. 3

*Syphilis and Tuberculosis. A. Mirande.—p. 105.
Pneumothorax Treatment of Pulmonary Tuberculosis. C. Riviere.—p. 114.
Treatment of Laryngeal Tuberculosis with Spiess's Gold Solution (ethylene-diamin-cantharidin-auricyanid). E. G. Glover.—p. 126.

Syphilis and Tuberculosis.—The following statements indicate Mirande's agreement with Sergent's results: Syphilis and tuberculosis are very intimately connected. Syphilis provides a soil for tubercle bacillus. If the organism overcomes the initial effects of the association, and if treatment is commenced, the tuberculosis lesion exhibits a tendency to assume a fibrous nature. Mercury, far from being nocive, is the remedy for syphilotuberculosis.

Archives de Médecine des Enfants, Paris

April, 1920, **23**, No. 4

Significance of Eruptions in Children's Diseases. Jourdanet.—p. 201.
Hereditary Syphilis and Dystrophies. Hutinel and Stévenin.—p. 205. Conc'n.
Congenital and Hysteric High Shoulder. A. Trèves.—p. 238.
Adhesion of Tip of Tongue in Cleft Palate. J. A. Phélip.—p. 243.

Bulletin de l'Académie de Médecine, Paris

March 2, 1920, **83**, No. 9

*Hyperglycorachia in Epidemic Encephalitis. C. Dopter.—p. 203.
*Syphilis and Epidemic Encephalitis. E. Jeanselme.—p. 210.
Remote Consequences of Epidemic Encephalitis. H. Claude.—p. 215.
Chronic Dyspepsia in the Gassed. M. Loeper.—p. 217.

Sugar in Cerebrospinal Fluid in Epidemic Encephalitis.—Dopter found 0.85 gm. per liter of the fluid in a young man with symptoms suggesting tuberculous or syphilitic meningitis. This hyperglycorachia, as he calls it, differentiated the case as epidemic encephalitis as the fluid was limpid and the Wassermann test negative. This excessive sugar content is not constant, but it is an aid in differentiation when found.

Syphilis or Epidemic Encephalitis.—Jeanselme comments on the difficulty of distinguishing between these diseases when the encephalitis develops in a syphilitic. Each is liable to entail dissociated paralysis of the cranial nerves, the Argyll Robertson sign, convulsions and apoplectiform coma. He describes an instructive case of the combination.

March 16, 1920, **83**, No. 11

*Lethargic Encephalitis. Laubie.—p. 246. G. Marinesco (Bucharest).—p. 248.
*Index of Renal Excretion of Chlorid and Water. A. Pruche.—p. 256.
Sequelae of Appendicectomy. Enriquez.—p. 258.
*School Inspection During Epidemics. L. Azoulay.—p. 262.
*Prophylaxis of Typhus. P. F. Armand-Delille.—p. 265.

Antitetanus Serum in Treatment of Lethargic Encephalitis.—There was prompt improvement in Laubie's two cases and in Coquet's case of severe epidemic encephalitis, with stiffness of the neck and contractures, after intraspinal or subcutaneous injection of antitetanus serum. The injection was made the fourth day in one case, and, in all, the symptoms subsided in thirty-six to forty-eight hours afterward.

Index of Renal Excretion of Water and Chlorids.—Pruche gives a formula for determination of what he call the *coefficient hydrochlorurée*. It is determined by comparing the concentration of chlorids in the urine with the dry residue obtained by evaporation of the blood serum.

Management of School Inspection During Epidemics.—Azoulay suggests having separate quarters, where the classes can be held in case of an epidemic, for the children from homes where there is a case of the epidemic disease, when, on account of quarantine measures, as many as ten or fifteen children have to be excluded from attending school. Children who have recovered from the epidemic disease should also attend this separate school for the contagious, until they can present a certificate from some physician to the effect that danger from them is past. He advises offering a premium for the declaration by physician or layman of an acute contagious disease, verified by a third party. Printed circulars should be distributed to parents, and be placarded, dealing with the disease, its prophylaxis and the necessity for collaborating with the public health authorities.

Prophylaxis of Typhus.—Armand-Delille explains that lice are unable to proliferate when for a third at least of each twenty-four hours they are deprived of the warmth of the body. It takes twelve days for the louse to mature, hence if the clothes are ironed on the inside with a hot iron once a week for four or five weeks, this will interrupt the evolution of the different generations as they develop and none will reach the reproduction period. They thus all die off in time although the hot iron does not kill them all, but it destroys enough of the lice and nits for the purpose, even with a single weekly ironing, especially along the seams. He warns further that when different shifts of workmen occupy the same beds, so that they are more or less continually in use, this breeds vermin rapidly, while letting the bedding grow cold for several hours checks the development and reproduction of lice.

Bulletin Médical, Paris

March 20, 1920, **34**, No. 17

*Aphasia and Apraxia. Laignel-Lavastine.—p. 277.
March 27, 1920, **34**, No. 18. Bacteriotherapy Number
*Vaccines in Therapeutics. L. Girard.—p. 297; in Typhoid. H. Méry.—p. 301; in Typhoid. L. Fournier and A. Schwartz.—p. 303; in Dermatology. A. Mauté.—p. 310; in Epidemic Meningitis. L. Girard.—p. 313.

Aphasia and Apraxia.—Laignel-Lavastine summarizes our present knowledge of this subject, and emphasizes the necessity for eight forms of tests, tests for spontaneous speech, for repeated words, reading aloud, spontaneous writing, writing from a copy and writing from dictation, study of comprehension of spoken words, and study of comprehension of printed words. With apraxia the simple reflex and expressive movements must be studied as well as the descriptive and other movements, as he enumerates in detail.

Vaccines in Therapeutics.—Girard describes the technic for the preparation of vaccines, the indications for them in general, and the diseases for which they have been used to date. Méry reviews the experiences with vaccine in prophylaxis and treatment of typhoid, injected subcutaneously, and Fournier and Schwartz describe their experiences with the same given by the mouth. They report a favorable action from this buccal vaccinotherapy in nearly every case, the prompter and more decided, the earlier in the disease this treatment was begun. The fever rapidly subsided and the course of the disease was notably shortened in the favorable cases. They had only eight deaths among their 150 typhoid patients given this treatment, and in this small group of fatal cases the fatal outcome was due to acute myocarditis, perforation of the bowel the second day, acute appendicitis or complicating influenzal pneumonia. The vaccine they use contains about 0.25 gm. of the desiccated bodies of the bacteria from twenty-four hour cultures of typhoid and paratyphoid bacilli.

Mauté reviews his personal experience with vaccine therapy in skin diseases, declaring that his results have been so interesting that they should inspire every physician to try this method in prophylaxis and in treatment. He prefers autovaccines for their infinitely less toxicity, the absence of local reaction, and the painlessness of the injection, and the fact that recurrences are much less frequent. He refers to Danysz' success with an emulsion of germs from the patient's stools, administered by the mouth and subcutaneously, and states that indirect immunity can be realized with ordinary saprophytes in typhoid and in rebellious eczema and pruritus. He has found further that intravenous injection of a staphylococcus vaccine, 20 millions on alternate days for a series of six injections, has a manifest influence on rebellious acne, and yet acne is not a staphylococcus disease. He theorizes to explain its action, and remarks that, in any event, the fact is worth remembering in treatment of such a rebellious affection as acne.

He has also utilized in treatment of erysipelas a water-soluble substance derived from the stools by precipitation with alcohol, after separating out the albumins with heat in an acid solution; it has a pronounced regulating action on the peripheral circulation. The therapeutic rôle of microbian injections, he continues, is thus becoming more and more extensive, and susceptible of numerous clinical applications hitherto undreamed of. He adds that staphylococcus vaccines seem to be the only efficient ones in dermatology; his experience with streptococcus vaccines has been disappointing, especially in recurring erysipelas. The staphylococcus vaccine can be used not only in furunculosis and carbuncle but also for folliculitis and sycosis. When it is important to act quickly, he does not hesitate to inject the vaccine by the vein. He begins with 10 millions; gives 15 millions the next day, and the third day 20 millions, repeating this last dose two days later. After a pause of three days he begins anew, but only with the preventive doses this time. With these doses, he says, the intravenous injection of the staphylococcus vaccine does not cause any general reaction. For the subcutaneous injection he uses doses of from 250 to 500 millions.

Bulletins de la Société Médicale des Hôpitaux, Paris

Feb. 13, 1920, **44**, No. 6

Lethargic Encephalitis. M. Labbé and others.—pp. 194, 198, 199, 207, 209.
*Suprarenal Insufficiency in Relapsing Fever. Monziols and Collignon. —p. 214.
*Plague at Constantinople. Idem.—p. 215.

Acute Suprarenal Insufficiency After Arsenic Treatment of Relapsing Fever.—Monziols and Collignon explain the acute suprarenal insufficiency, sometimes observed after injection of neo-arsphenamin in treatment of relapsing fever, as due to the sudden flooding of the organism with the toxic products liberated by the sudden destruction of the spirochetes. The suprarenals are unable to keep up with their task in these circumstances, and acute suprarenal insufficiency is soon manifest. All trouble from this source could be averted, they found, if epinephrin was injected with the neo-arsphenamin. This tided the patient along without harm until his suprarenals could cope with the conditions.

Plague in Constantinople.—Monziols and Collignon review their experiences with forty-four cases of plague at Constantinople in the last quarter of 1919. The mortality was 40 per cent. The bacillus was found in the blood only in 16 per cent. of the twenty-five examined, and it had disappeared from the blood by the sixth to the twelfth day.

Paris Médical

March 6, 1920, **10**, No. 10

*Dermatology and Syphilis in 1920. G. Milian.—p. 181.
Continuous Suppurative Acrodermatitis. E. Bodin.—p. 185.
*Generalized Xanthoma. L. Spillmann and Watrin.—p. 193.
*Urticaria. A. Louste.—p. 198.
Malaria as Factor in Malignant Syphilis. Lacapère and Decrop. —p. 203.
Eczema as a Tuberculid. G. Milian.—p. 206.
Influence of Inadequate Treatment on Appearance of Meningeal Syphilis. M. Pinard.—p. 211.

Dermatology and Syphilis in 1920.—Milian regards as established that there are different kinds of *Spirochaeta pallida*, so that the old term "parasyphilis" for tabes and general paresis is correct. The difference between tabes, general paresis and syphilis in general is analogous to the difference between typhoid and paratyphoid. He comments on Hutinel's recent report of cases of latent inherited syphilis roused to active evolution by some intercurrent acute infectious disease. Lesions may flare up in bone, skin or elsewhere, and the syphilitic nature be overlooked unless the physician is on the alert to recognize the unusual aspect of the intercurrent disease under these circumstances.

Generalized Xanthoma.—Two colored plates show the histologic findings in a case of generalized papulous xanthoma in a boy of 9. His entire body was scattered with small polygonal tumors, yellowish or brown, for which no cause could be discovered. They persisted practically unmodified for nearly five years. Then the child died from privations during the German occupation of his town.

Anaphylaxis.—Louste is inclined to accept the physical theory of anaphylaxis rather than Richet's chemical or Friedländer's biologic theory. The physical theory ascribes the anaphylactic shock to processes of precipitation and absorption between colloids. This would explain the similarity of the phenomena observed, regardless of the etiology. It is possible that the chemical theory supplements the physical theory by assuming a chemical action as predisposing to the physical changes. Treatment should aim not only to ward off the cause but at the same time to train the subject to be less susceptible to the cause. A small preliminary dose or injection of peptone or similar substance adapts the organism so that the anaphylactic shock is warded off. Intolerance to quinin can thus be cultivated away by a small preliminary dose before the therapeutic dose of the drug. Sicard has found that the therapeutic dose of an antiserum can be safely injected into the arm when the circulation is completely shut off. In a few minutes the circulation can be restored by removal of the constricting band, this brief delay being sufficient to ward off danger of anaphylaxis from the antiserum. Pagniez has cured patients of intolerance for albumin in the food by having them take 0.5 gm. of peptone regularly before the meal. It is a simple matter

by this means to confer lasting immunity on the patient and relieve him of his annoying or dangerous idiosyncrasy.

Presse Médicale, Paris

April 7, 1920, **28,** No. 20

*Lethargic Encephalitis. A. Netter.—p. 193.
*Typhus. Legry, Courcoux and J. Lermoyez.—p. 195.

Epidemic Encephalitis.—This is an address delivered by Netter in the Sarre district where the disease is appearing.

Typhus.—A few mild cases of typhus having appeared in a group of foreign workmen in Paris, Legry and his co-workers warn all to be on the alert for such cases, and they describe the early clinical picture: the sudden onset, extreme prostration, high fever, headache and congested catarrhal conjunctivae.

April 10, 1920, **28,** No. 21

*Hygiene and Its Perspectives. L. Bernard.—p. 201.
Intravenous Injections of Hypertonic Glucose Solution. L. Cheinisse. —p. 206.

Hygiene and Its Perspectives.—This is Bernard's inaugural address on assuming the chair of hygiene at Paris.

April 14, 1920, **28,** No. 22

*Myoclonic Encephalitis. J. A. Sicard.—p. 213.
The General Reactions of Bone Tissue in Bone Disease. Nathan. —p. 214.

Myoclonic Encephalitis.—Sicard has encountered in less than three months five cases of what he calls myoclonic encephalitis, and says that it must rank beside lethargic encephalitis. General lassitude and intense lancinating pains with mild fever may keep up for a week or ten days; then comes a week or so of the muscular jerkings and twitchings but there is no contracture, no spasms, no chorea nor athetosis, only actual myoclonia. During this stage the neuralgic pains subside and there is no somnolency nor ocular symptoms. Toward the third week there may be a tendency to delirium but the reflexes and the pupils keep normal. The whole course of the disease is from four to eight weeks. In the terminal stage the delirium is constant but the other symptoms subside, and the patient falls into coma and dies or the delirium subsides and he recovers. The disease does not seem to have a destructive action on the nervous system but rather to fasten on it momentarily and impress it, and then pass off. Although the symptoms seem so grave yet they are transient, and if the patient recovers no permanent damage seems to result.

Progrès Médical, Paris

March 20, 1920, **35,** No. 12

*The Omentum from the Surgical Standpoint. A. Aimes.—p. 125.
*Catheterization of the Ureter for Anuria. L. Thévenot.—p. 129.
*Vein Urethroplastics. Legueu.—p. 130.
The Diplogenesis versus the Blastomere Theory in Relation to Double Monsters and Dermoid Cysts. E. Chauvin.—p. 132.

Surgical Importance of the Omentum.—Aimes discusses the protection afforded by the omentum in wounds and at operations, and its usefulness as a plastic material, reviewing the literature on the subject. He also analyzes several hundreds of cases of omentopexy on record, remarking in conclusion that this latter operation has some favorable cases to its credit, but on the whole has not fulfilled its promise. It has a high operative and postoperative mortality, and in cases of cirrhosis benefits only the one symptom, the ascites, and not always this.

Catheterization of the Ureter in Anuria from Concretions.—Thévenot knows of thirty-eight cases on record besides the two he here describes in which catheterization of the ureter put an end to the anuria either by pushing the calculus back into the kidney or by arresting a reflex spasm or by both mechanisms. If saline, glycerin or oil is injected through the catheter, this may induce reflex action causing the expulsion of the calculus. In some of the cases in the literature the anuria recurred later but was conquered in the same way by catheterizing anew. If there is no sign of uremia, this catheterization might be tried up to the fifth day of the anuria, but after this, or with uremia, nephrotomy should be done at once.

Vein Urethroplastics.—Legueu does not agree with those who think that there are too many drawbacks to using a vein to reconstruct the urethra. He reports a fairly successful case and states that in the twenty-three cases on record, an autograft was used in eighteen. The best results were realized with terminal urethroplastics, as this gives only one zone of stenosis. Diversion of the urine is an indispensable preliminary. Even more indispensable, he says, is the retention in the vein graft of its blood content. The segment of vein is tied at each end and the blood thus imprisoned serves to nourish the graft until it "takes." This gives it strength to resist the retraction of the skin in the tunnel made for it. He has traced the process in experiments on dogs.

Schweizerische medizinische Wochenschrift, Basel

March 25, 1920, **50,** No. 13

*The Internal Secretion of the Ovaries and Functional Uterine Hemorrhage. H. Meyer-Ruegg.—p. 241.
*Ambulant Treatment of Fractured Humerus. H. Iselin.—p. 248.
Epidemic Encephalitis at Zurich. H. W. Maier.—p. 249. Conc'n.

The Ovaries and Functional Hemorrhage from the Uterus.—Meyer-Ruegg presents the various theories in vogue on this subject, his own conviction being that functional uterine hemorrhage is not due primarily to the ovaries. "The nervous system or constitutional causes may be primarily involved, or the structure of the uterus. But removing the ovaries or devitalizing them with the roentgen rays breaks up the chain of processes which eventuate in menstruation, and this breaking of the chain occurs at a point where all the wires cross, that is, in the follicular apparatus. We are thus able to arrest menstruation entirely, but it is beyond our power to regulate it."

Fracture of the Humerus.—Iselin comments on the new light thrown on fracture of the humerus below the tuberosity by roentgenography from the axilla. This has shown that the sagittal displacement is usually much greater than would be suspected when examined from other planes. Ordinary extension does not suffice; it requires not only horizontal, sagittal extension but also diagonal adduction in the horizontal plane to correct the fracture. He gives illustrations of the roentgen findings and of the device with which he corrects the displacement while the patient is allowed to be up and about. The arm is held horizontal, the hand on the other shoulder, the entire arm resting on a thick upholstered cotton pad worn around the trunk, extending from the axillae to the waist, with a broad strap passing over the arm and over the hand on the other shoulder. This answered its purpose admirably in a number of cases as he describes.

Anales de la Facultad de Medicina, Lima

January-February, 1920, **3,** No. 13

Case of Lethargic Encephalitis. E. Odriozola.—p. 5.
*American Trypanosomiasis in Peru. E. Escomel.—p. 14.
Essential Epilepsy. C. A. Bambarén.—p. 18. To be cont'd.
The Pharmacists of Early Peru. H. Valdizán.—p. 42.
Sudden Death at Lima. F. Quesada.—p. 49. Cont'n.
Normal and Pathologic Speech. L. D. Espejo.—p. 61. Cont'n.
Infant Mortality at Lima in 1918. R. Eyzaguirre.—p. 72.

American Trypanosomiasis in Peru.—Escomel found *Schizotrypanum cruzi* in the blood of a man of 40 from the part of Peru that borders on Brazil, and publishes it as the first case of Chagas' disease to be recorded in Peru. The symptoms were a certain degree of general edema, extreme prostration, and tendency to somnolency, but the man related that he had long been subject to "marsh fever," and his complexion was the greenish-yellowish pallor common to the dwellers in the tropical zone of the center of South America.

Crónica Médica, Lima

February, 1920, **37,** No. 680

Nature of the Elemental Process of the Function. H. F. Delgado. —p. 45.
*The Pathologic Importance of the Proteins in the Urine. J. Lanfranco.—p. 59.
*Frambesia in Peru. Buenaventura Burga.—p. 72.

The Proteins in the Urine.—Lanfranco agrees with those who think there are not so many varieties of protein in the

urine as some allege. On the other hand, he declares, normal urine in the kidney is absolutely free from proteins of any kind. Among the proteinurias for which the liver is responsible, he lists the albuminuria of puberty, cyclic albuminuria, the albuminuria of the newly born, and alimentary albuminuria. There is also the proteinuria of endocrine or of cardiac origin and of chronic infections. In the latter the multiplicity of the lesions deprives the albuminuria of any exact diagnostic or prognostic value in respect to the kidneys.

Frambesia in Peru.—Yaws or frambesia is called *cuchipe* in Peru; it is usually mild and disappears without leaving a trace, but recurrence has been known. Two cases are described, and the discovery of *Treponema pertenue* in the lesions suggests that the disease might appropriately be called Castellani's treponemosis.

Revista Médica, Puebla, México

April, 1920, **2**, No. 3

The Civil Authorities and Professional Secrecy. F. L. Casián.—p. 49.
Composition and Nutritive Value of Foods and Beverages of Native Mexicans. M. Ibañez.—p. 56. Cont'n.
Rupture of Body of Uterus. A. López Hermosa.—p. 65. Cont'n.

Archiv für Verdauungs-Krankheiten, Berlin

1920, **26**, No. 1-2

*Obliteration of Hemorrhoids. I. Boas.—p. 1.
*Duodenal Tube Reveals Occult Hemorrhage. F. Seidl.—p. 19.
*Harmless (Renal) Diabetes. O. J. Wynhausen and M. Elzas.—p. 33.
*Percussion with Gastro-Intestinal Disease. R. Uhlmann.—p. 53.
Syphilitic Tumor of the Stomach. G. Haas.—p. 68.
*Effect on Gastric Secretion of Organ Extracts. F. Boenheim.—p. 74.
Roentgen-Ray Study of the Cecum Region. W. Bauermeister.—p. 121.

Obliteration of Hemorrhoids.—Boas' method of obliterating hemorrhoids by injection of alcohol into the nodules was described in THE JOURNAL, Feb. 14, 1920, page 497. He here gives minute directions for the procedure and emphasizes the fine results he has obtained in his fifty cases to date. The vacuum glass he uses to draw the hemorrhoids out from the anus fits over the entire anus region, and he applies the vacuum suction sometimes for as long as thirty minutes, to be sure that all the nodules have been sucked out. Even when the hemorrhoids protrude so that suction is not necessary, he usually applies it to make sure that no nodules will escape treatment. If there is much tendency to bleed, he gives three or four rectal injections of a 5 per cent. solution of calcium chlorid the day before.

When returned to the bowel after injection of the alcohol, the nodules shrivel and heal by a kind of thrombophlebitis process in three or four weeks and the mucosa finally feels quite normal. The whole process in the rectum is scarcely noticed by the patient, and requires no after-care as is necessary when the injected piles heal outside the anus. He rubs the extra-anal mucosa with petrolatum and is careful not to allow this mucosa to be pushed inside, as it may become irritated by escaping alcohol and possibly ulcerate. If any nodule protrudes anew after defecation it may be necessary to inject it anew with alcohol or allow it to heal outside the anus. In four of his fifty cases this treatment was applied on account of recurrence after excision some years before. The healing was complete in more than 50 per cent. of his cases in one or two weeks, including 25 per cent. healed in from four to eight days. With this technic the sphincter is left intact, and the results were as satisfactory in the severest as in the mildest cases, while the certainty and the permanence of the cure surpass, he reiterates, even what can be realized with the knife.

Duodenal Tube Reveals Occult Bleeding.—Seidl uses a soft duodenal tube to obtain contents from the cardial and pylorus regions of the stomach and from the duodenum, to detect occult hemorrhage and locate approximately the source of the bleeding. In some cases of certain ulcer in stomach or duodenum the tube findings were positive when no trace of blood could be found in the stools on three examinations, at intervals, or else bleeding hemorrhoids rendered the findings unreliable. He gives the details of twenty-six of his total seventy cases thus examined, showing the instructive findings as the patient lies on his left side, with the tube introduced for 50 cm. or on the right side, tube 90 cm., or the tube is carried down into the duodenum. The findings were constantly negative in patients showing no symptoms of an ulcer. The stomach and duodenal contents thus obtained can be used for other analysis, and repeated tests of this kind will distinguish ulcer from cancer, show the progress under treatment and the indications for operative measures. After gastro-enterostomy for ulcer, the ulcer did not heal unless a systematic dietetic treatment of the ulcer was enforced thereafter. The soft duodenal sound does not cause erosions which might obscure the findings.

Harmless Diabetes.—Wynhausen and Elzas prefer this term to "renal diabetes," the term usually employed to express glycosuria with normal sugar content of the blood and very slight if any of the usual symptoms of diabetes. This diabetes innocens, as they call it, is not rare as they have records of over thirty cases in a comparatively brief period, and they analyze most of them here. The disturbances are so slight that no one seeks medical aid for them, and the discovery of the glycosuria is usually accidental. It can be classed as belonging to this harmless group when the sugar content of the blood keeps normal before and after the test breakfast or does not go above 1.5 or 1.7 per thousand. They recognize four groups, all with normal blood sugar content, but classified according to the amount of glycosuria after the alimentary test. The harmless character persists in three of the groups, but in the fourth, in which there is slight glycosuria fasting but it runs up high after the alimentary test, symptoms suggesting true diabetes develop in time. The experiences related suggest further that it is possible for the sugar content of the blood to be above normal, and yet the glycosuria persists in this harmless type, showing no tendency to progress.

Tenderness on Percussion in Diagnosis of Gastro-Intestinal Disease.—Uhlmann insists that the sensitiveness to tapping is far more instructive than mere tenderness in the differentiation of inflammatory from nervous-functional processes, for localization of a pathologic focus and control of its progress or subsidence, for discovery of a localized painful point, and for estimation of irritation of the peritoneum. He gives examples of each of these and describes the zone of extra tenderness that usually encircles the point most sensitive to the percussion hammer. The sensitive zone is so clearly outlined by the patient on repeated examination that the method is actually objective.

Effect on Gastric Secretion of Extracts of Endocrine Glands.—Boenheim devotes nearly fifty pages to the account of his tentative treatment in this line, in 154 separate experiences. The findings are tabulated for comparison. A marked regulating influence on gastric hyperacidity was evident from thyroid and pituitary treatment, and on subacidity and anacidity from pancreas extract. Thymus and thyroid extract have a similar but less pronounced action. With normal acidity, he found that thymus and pituitary increased while thyroid and ovarian treatment reduced the acidity; after a test breakfast digestion of albumin was checked. He says that these endocrine extracts, injected subcutaneously, seem to have a potent action on gastric secretion, transforming it, probably by their effect on the nervous mechanism of the stomach. Some of his conclusions conflict with generally accepted views, but the results obtained justify, he says, continuing research in this line both experimentally and in the clinic, as the secretory functioning of the stomach can thus be modified at will by organ extracts, and the effect lasts long after the treatment has been suspended. His series of climacteric neuroses confirms that excessive ovarian functioning checks gastric secretion, while insufficient ovarian functioning entails a tendency to hyperacidity.

Deutsches Archiv für klinische Medizin, Leipzig

Oct. 24, 1919, **130**, No. 5-6

*Atypical Chronic Anemia. F. Herzog.—p. 285.
*Atypical Hemolytic Jaundice. K. Beckmann.—p. 301.
*Polycythemia. G. Herrnheiser.—p. 315.
*Origin of Albuminuria. Recka Mandelbaum.—p. 331.
*Acute Yellow Atrophy of the Liver. W. Weigeldt.—p. 342.
*Influence of Muscular Work on Sugar Content of the Blood. O. Brösamlen and H. Sterkel.—p. 358.

Atypical Chronic Anemia.—Herzog describes two cases of chronic anemia, in men of 23 and 34, for which no cause could be discovered during life or at necropsy. The younger man died suddenly, during an apparent remission, from pulmonary edema. The blood picture was that of secondary anemia; there was no gastric achylia while the iron reaction in the organs excluded Biermer's pernicious anemia. The other man's anemia was of seven years' standing with various remissions, and intestinal hemorrhages for a time but the anemia had preceded them. There was no very active regeneration of blood, but the abnormality was too slight and of too long duration to be classed as aplastic anemia. The findings in the tongue resembled those of true pernicious anemia, but the lack of gastric achylia and the recent benefit from blood transfusion seemed to exclude this. The patient is still under observation.

Atypical Hemolytic Jaundice.—Beckmann reports the minute details of two cases of supposed hemolytic jaundice in which there were no signs of extra susceptibility of the blood corpuscles to hemolysis. But it proved possible by applying provocative measures to the spleen—as in malaria—to render the erythrocytes abnormally susceptible. In two other cases in which the erythrocytes were found already exceptionally fragile, these provocative measures failed to induce any appreciable modification. In one case of hemolytic jaundice, clinically normal conditions were restored after splenectomy except for slight anisocytosis and slightly abnormal susceptibility of the erythrocytes. He adds that no traces of any special hemolytic substances could be discovered. The provocative measures aimed to reduce the resisting powers of the organism in general, or of the spleen alone, and thus exaggerate the destruction of the blood. The spleen was lightly massaged and then douched with alternately hot and cold water, and the region was then exposed daily to the mercury quartz lamp from front and rear for periods increasing from five to sixty minutes in the course of the week, the provocative measures concluding with a single roentgen exposure of three quarters of the full dose. The patients were men of 37 and 34, and the child of the younger man showed a similar tendency to anemia and slight jaundice with enlargement of the spleen. The provocative measures induced prolonged extra susceptibility of the erythrocytes; it was evident six months afterward in the man reexamined. The stools were normally colored in both and there was urobilinuria, and the extra susceptibility of the erythrocytes coincided with increased numbers of erythrocytes but mainly of the microcyte type. Microcytosis seems to be typical of hemolytic jaundice, and suggests some causal connection. Removal of the spleen may cure the tendency completely and is usually followed by marked benefit, even in the familial form although it may not be lasting here. In one such case the spleen weighed 2½ pounds and the erythrocyte susceptibility index dropped from 0.66 to 0.52, very close to the normal range.

Polycythemia.—Herrnheiser argues that not only increased production of erythrocytes but reduction in their normal destruction are involved in the production of true polycythemia rubra, and there may be various causes for this. In a case described with the metabolic findings nothing to indicate primary irritation of the bone marrow could be discovered. In such cases, he adds, special attention should be paid to detection of constitutional anomalies, to the cholesterin metabolism and to the behavior of the frequent orthostatic albuminuria. The patient in his case was a robust agricultural worker of 18 who complained of agonizing headaches, fatigue and dizziness. He ascribed the symptoms to a sunstroke the summer before. The spleen was not enlarged and the blood pressure was within normal range, but there was pronounced orthostatic albuminuria, and the choleserin content of the serum was below normal. No relief was obtained from a single lumbar puncture. Venesection seemed to benefit more than raying the long bones, but as spontaneous remissions are sometimes observed, Herrnheiser does not regard this as conclusive.

Origin of Albuminuria.—Mandelbaum comments on the general assumption that while the diseased kidney may not permit urea, salt or even water to pass, yet it will let the big albumin molecule filter through without interference. Clinical examination of sixty-two patients with various forms of kidney and bladder disease and a series of experiments on rabbits have demonstrated that this view is incorrect. The inflamed kidney epithelium does not allow the passage of serum albumin. Hence it follows that the albumin found in the urine does not come from the blood but must be secreted by the renal epithelium itself, an active, vital function or a reaction of the epithelium cells. Conditions here are the same as with meningitis; normally there are only traces of albumin in the cerebrospinal fluid, but when the meninges are inflamed then the albumin content rises. All the tests showed that filtering ascites fluid, pleural effusions, blood serum and similar fluids through a delicate animal membrane, such as the rabbit and cat intestine, the albumin content of the filtrate was about the same as that of the original fluid, and the proportion of albumin to globulin persisted unmodified, but when the membrane was hardened or otherwise rendered less permeable, the globulin was arrested first; with increasing impermeability none of the albumin passed into the filtrate or dialysate. Applying these findings to conditions in the kidney, either the proportion of globulin and albumin should be the same in the urine as in the blood, or the albumin should predominate. But this is not the case with diseased kidneys. A relative preponderance of globulin has been found in the urine in simply congested kidneys and in orthostatic albuminuria. This conflicts most decidedly with the assumption that the albumin merely filters through from the blood.

Acute Yellow Atrophy of the Liver.—Weigeldt reports the discovery of vacuolar inclusions in about 50 per cent. of the neutrophil polymorphonuclear leukocytes in a case of acute yellow atrophy of the liver in a man of 27. The number of erythrocytes and the hemoglobin percentage are usually above normal in this disease, and the neutrophils are above the usual figures, with displacement of the blood picture to the left. But these findings have no differential significance as they are common to phosphorus poisoning, infectious and other forms of jaundice. If these vacuolar cell inclusions are confirmed by others, this will aid materially in the diagnosis. The article is illustrated. Weigeldt has not been able to find any record of such intracellular findings in the accessible literature.

Influence of Muscular Exertion on Sugar Content of the Blood.—Brösamlen and Sterkel found a marked reduction in the sugar content of the blood in ten healthy persons after physical exertion leading to rapid fatigue. The maximum reduction was reached in from one and a half to four hours after the exertion. Corresponding tests in four diabetics were followed by a pronounced rise in the sugar content, beginning at once after the exertion and keeping up for several hours. The curve is not regular but shows slight rises and falls. The findings on the whole confirm that diabetes is essentially a pathologic excessive glycogenolysis. There did not seem to be any connection between the intensity of the reaction and the severity of the diabetes, in his cases, and in two of the tests a slight reduction of the blood sugar content was found. The findings are apt to be misleading unless series of tests are made, and it does not seem to be possible to modify the exertion-sugar curve by dieting or changing the mode of life.

Deutsche medizinische Wochenschrift, Berlin

March 25, 1920, **46**, No. 13

*Partial Immunity, with Depression of Virulence. Morgenroth and others.—p. 337.
Tonsils as Portal of Entry for Infections. J. Citron.—p. 340.
Diagnostic Value of Agglutination Reactions with Various Micro-Organisms Present in Typhus Fever. E. Weil.—p 343.
Origin of Acute Leukemia. H. Lüdke.—p. 345.
Psychophysical Methods in Psychiatry. O. Löwenstein.—p. 348.
Critical View of Public Disinfection System. M. Neisser.—p. 351.
Reconstruction of Thumb. P. Manasse.—p. 352.
Dermatitis from Imitation Leather Sweatbands. Siebert.—p. 355; Idem. J. Stangenberg.—p. 355.
Decline in Birth Rate and Loss of Life in England and France During the War. F. Prinzing.—p. 355.
Management of Epistaxis. G. Finder.—p. 356.

Partial Immunity, with Depression of Virulence.—Morgenroth, Biberstein and Schnitzer have been experimenting with superinfection, or superposed infection, as this field of investigation has thus far resisted any attempts to harmonize its findings with the prevailing theories in regard to immunity, and as experimental studies in this field seemed to promise good results. They started with the commonly accepted theory that the infected organism acquires an immunity against superinfection, and against a like, superposed infection, but they became interested in the investigations of Landsteiner and Finger, who maintain that the organism infected with syphilis is by no means immune to a new syphilitic infection, as has been commonly supposed. Their experiments demonstrated that mice with an experimental, chronic streptococcus infection, streptococci being found in the blood and in the organs, possess immunity toward a superinfection with streptococci, as is shown by the fact that when given a streptococcus dose, such as will kill normal animals within twenty-four hours, they show no change in their behavior. They are immune not only toward the strain of streptococcus with which they were primarily infected but also against foreign strains of streptococcus. However, this immunity is not absolute but relative, for it is broken down by a strain of especially high virulence, in which case the infection runs an acutely fatal course, as in the controls. This partial immunity does not lie in the fact that the superinfection does not "take"; on the contrary, the streptococci used for the superinfection appear in the blood and organs, and by the aid of especially "marked" strains could be shown to remain present for some time. The partial immunity consists, therefore, merely in a depression of the virulence of the infection. This immunity was developed in from six to twenty-four hours after the experimental infection. It does not seem to have anything to do with anaphylaxis, but presents a new kind of immunity. They theorize that the passing of an acute infection into a chronic phase is conditioned by the development of this "depression immunity." The latter is not the result of the chronic infection, but every infection that is not rapidly fatal has its course determined by the depression immunity. Each phase of the infection is the result of the antagonism between the causal germ and the degree of depression immunity at the moment. This assumption throws light on natural immunity and all other forms of immunity which do not fit into the picture of immunity from antibody production. They suggest in conclusion that certain hormones which normally regulate the growth of the cells may be the factors in this depression immunity.

Münchener medizinische Wochenschrift, Munich

Dec. 19, 1919, **66,** No. 51

*The Vessels in Syphilis and Nicotin Poisoning. R. Beneke.—p. 1463.
Iodin Ions in Treatment of Erysipelas. K. F. Beck.—p. 1467.
Year of Industrial Service and Physical Training. Weitz.—p. 1472.
Need of Interest in Athletics in Schools and Universities. Pfister. —p. 1472.
Sanitary Procedures in Southern Bavaria in 1919. G. Mayer.—p. 1473.
Use of Pyoktanin in Internal Medicine. G. Blank.—p. 1474.
Intravenous Injection of Opaque Fluids. W. Heyl.—p. 1475.
Measurements in Deep Roentgenotherapy. H. Chaoul.—p. 1475.
Utilization of Surplus Human Milk. R. T. von Jaschke.—p. 1477.
Wound Diphtheria. A. Weinert.—p. 1477.
Blood Findings in Typhus Fever. F. Schiff.—p. 1478.

Vascular Changes in Syphilis and Nicotin Poisoning.—Beneke reports three cases of nicotin poisoning that presented peculiar vessel symptoms: vascular dilatation, degeneration of the media, marked fatty degeneration of the intima, with relatively slight sclerosis; the coronary arteries and other branches of the aorta were especially implicated. Beneke regards it as significant that a predominating nicotin poisoning could cause such severe arterial changes. He thinks in view of these findings, and the fact that smoking is so widespread, the assumption that nicotin poisoning may be the primary cause of many cases of grave arterial changes, or at least a strong contributory factor, appears to be well founded. The three men were 42, 44 and 48 years old, and had been addicted to smoking many strong cigars or cigarettes. No abuse of alcohol was known and there was nothing to suggest syphilis or other infection. Two had succumbed to coronary failure.

Wiener klinische Wochenschrift, Vienna

Jan. 1, 1920, **33,** No. 1

Colloidal Gold Reaction in the Cerebrospinal Fluid in Syphilis. Kyrle, Brandt and Mras.—p. 1.
Accentuation of the Effect of Quinin by Means of Fluorescent Substances. S. Rusznyák.—p. 6.
Combined Quinin and Methylene Blue Therapy in Malaria. Reitler. p. 9.
Radiotherapy in Carcinoma of the Larynx. G. Alexander.—p. 12.
Mesenteric and Retroperitoneal Suppurations in the Differential Diagnosis of Appendicitis. W. Goldschmidt.—p. 14.
*Thermopenetration in the Treatment of Chilblains. R. Grünbaum. —p. 16.

Thermopenetration in Treatment of Chilblains.—Grünbaum has tried the mercury vapor lamp repeatedly in the treatment of chilblains, as it has been so warmly recommended of late, but he has not found it essentially superior to other methods. For the past year he has therefore been trying another method and is enthusiastic over the results. In treating for other diseases, he discovered accidentally that chilblains improved rapidly following thermopenetration and soon disappeared entirely. He therefore began to use thermopenetration as the routine treatment for chilblains and he is convinced that it is far superior to all the other usual forms of treatment. He is inclined to think it will prove efficacious in severe frostbite, but has not had an opportunity to try it out yet.

Zentralblatt für Chirurgie, Leipzig

March 20, 1920, **47,** No. 12

Instrumental Method of Tying Knots in Ligatures and Sutures. V. D. Varela (Buenos Aires).—p. 266.
Large Loose Body Found in Hydrocele of the Testis. E. Glass.—p. 267.
Antagonistic Action of Pituitary and Epinephrin on the Intestines. B. Zondek.—p. 270.

March 27, 1920, **47,** No. 13

*Carcinoma Dose in Radiotherapy. J. C. Lehmann.—p. 290.
*Postoperative Tetany and Parathyroid Grafts. E. Borchers.—p. 293.
*Extraperitoneal Abdominal Incision for Nephrectomy. K. Hofmann. —p. 297.

Carcinoma Dosage in Radiotherapy.—Lehmann assumes that nowadays almost every surgeon gives his patients with carcinoma of the breast prophylactic raying, following an operation. He states that he and his associates in the surgical clinic at Rostock have been using this method for the last seven years with the result that the freedom from recurrences for a period of three years has decidedly increased, being formerly 33 and now 47.5 per cent. of the cases coming to operation. He finds that in cachectic patients carcinomas are not at all sensitive to roentgen rays, whereas in the aged, carcinomas are often of slow growth and in that case easier to check with roentgen rays. Chancroid of the lip requires much more than 100 per cent. of the erythema dose, and radium therapy will usually prove more efficacious than roentgenotherapy. While no doubt progress is being made in the technic of roentgenotherapy as applied to carcinoma of the breast, Lehmann does not think it is wise to be overjubilant for fear of bringing the method into discredit.

Postoperative Tetany and Transplantation of Parathyroid Glands.—Borchers adds two more cases to the list of those in which parathyroid grafts have been successful in the treatment of postoperative tetany. It is unfortunate that ten years ago many surgeons, on the basis of animal experimentation, reached the conclusion that the transplantation of parathyroid glands from one person to another in treatment of tetany was useless. Their skeptical attitude was not justified, for even at that time excellent clinical results had been secured which Borchers is inclined to regard as more important than theoretical premises deduced from animal experimentation. Many authors had shown by animal experiments that the transplanted glands would not preserve their structure and function, but in man the glands, as can now be shown by a whole series of cases extending over several years, do preserve their structure and function, or at least a structure and function that protects. From this the important conclusion may be derived that animals behave functionally different from humans. That there are some failures still is only to be expected, but to date parathyroid grafting is the only treatment of chronic postoperative tetany that offers any chance for success.

The Extraperitoneal Abdominal Incision in Nephrectomy.—Hofmann denies that there is no essential difference between the extraperitoneal abdominal incision as recommended by him and paraperitoneal nephrectomy. He defends his method of an anterior longitudinal incision along the border of the rectus abdominis, or between the recti abdominis or even directly in the linea alba, analogous to Saenger's transperitoneal procedure, for the reason that thus the hilum of the kidney is brought into the center of the field of operation. The method is adapted to nephrectomy for any cause.

Zentralblatt für Gynäkologie, Leipzig

March 20, 1920, **44**, No. 12

Blood Transfusion. E. Bumm.—p. 286.
Effect on Lactation of Injection of Own Milk in Puerperas. F. Kirstein.—p. 292.

March 27, 1920, **44**, No. 13

*Exact Localization of the Focus of Infection in Roentgen Treatment of Carcinoma of the Uterus. H. Borell.—p. 313.
Treatment of Rectal Ulcers After Mesothorium Raying of Cancer of the Uterus. W. Kolde.—p. 319.
Blood Transfusion in Obstetric Cases. P. Esch.—p. 321.
Protection for Hereditary Syphilitics. M. Schwab.—p. 323.

Exact Localization of the Center of the Cancer in Roentgen Treatment.—Borell states that most roentgenologists (himself included) are not in possession of all the special instruments for determining the exact distance and localization of the focus from the surface of the body which it is so necessary to know in order to decide what dosage to use and in order to adjust the tube so that the central rays will fall on the center of the focus of infection. These exceedingly important points do not seem to be given by all the careful attention that they deserve. He describes a method that is available to all and which he has found very helpful in the absence of the more delicate measuring instruments, such as the iontoquantimeter, etc. It is adapted from the principle of roentgenologic localization of foreign bodies at any depth. A roentgenogram is made of the patient in a position which is exactly noted by a definite system that is described in detail, and then the tube is moved 6.5 cm. horizontally to one side, and another exposure is made on the same plate. This double exposure furnishes the basis for the localization of the foreign body, or in the present instance, of the center of the cancer, by two homologous points in the foreign body shadows. By means of Fürstenau's bathometer, which is provided with three different scales, the vertical distance of the foreign body, or of the site of the infection, is then quickly determined. Borell has been using the method for several months, and states that he has noted unusually good results in the regression of carcinomas by reason of the more exact technic that this method made possible.

Zentralblatt für innere Medizin, Leipzig

March 20, 1920, **41**, No. 12

Epidemic Encephalitis. R. Jaksch.—p. 210.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

Feb. 14, 1920, **1**, No. 7

*Anomalies in Head and Neck of Femur. J. H. Zaaijer.—p. 533.
*Pulse and Respiration Reactions to Emotions and Mental Processes. J. Bramson.—p. 547. Conc'n in No. 8, p. 614.
Systematized Public Health Service for Small Cities. Muskens.—p. 562.
*Radiotherapy for Mammary Cancer. W. H. Jolles.—p. 567.

Anomalies in Head and Neck of Femur.—Zaaijer refers to the dystrophy of the head or neck of the femur in the young such as has been described by Legg, Calvé and Perthes. It occurs usually between 5 and 10, with an extreme range of 3½ to 12. Before the publications of the above writers (1910) such cases would have been labeled tuberculous coxitis and treated accordingly. This mistake is still made, Zaaijer says, by those not familiar with the literature of the last ten years on this osteodystrophy of the hip joint. If there is pain, the joint must be relieved from weight-bearing, with correction of excessive adduction if required, but otherwise the child can be left unmolested. The final outcome may be perfect functioning or a condition like that with severe deforming arthritis. Usually, however, the final condition is between these extremes, with very little disturbances. The head may assume a valgus position, with the neck in a varus position. It is important to keep the child under supervision and correct in time any tendency to excessive varus deformity.

In 1914 a compilation of fifty-five such cases was published, all but eleven in boys, and in 66 per cent. of the cases there was a history of trauma of the hip joint, and this was probable in all. The injury at the junction of the epiphysis had evidently interfered with the nutrition of the head and neck. Zaaijer reports further the case of a girl of 12 who had tripped and fallen, and the neck and head had become entirely detached from the shaft of the left femur, complete epiphysiolysis. The dislocation was corrected and the parts healed in place in a plaster cast. About a year and a half later, a similar epiphysiolysis occurred on the other side. This healed likewise in a cast and, except for slight stiffness, the gait is now normal. Köhler has also published a case of bilateral femur-epiphysiolysis; it occurred while jumping rope. With the Osgood-Schlatter disease of the tuberosity of the tibia, these three form a group in which there may be occasionally pain but there is no inflammation, and the clinical manifestations are insignificant in comparison to the often gross anatomic lesions. The Osgood-Schlatter epiphysitis of the tibia occurs at 14 or 15, and juvenile epiphysiolysis from 14 to 18. He explains how the growth at these ages predisposes to these anomalies. The question of complete bed rest should be considered; it might ward off further deformity if applied during the first phase of the Perthes' disease, and it is certainly beneficial in the Osgood-Schlatter epiphysitis of the tibia. But it is a difficult matter to enforce for children who feel perfectly well and have no pain. With actual fracture and dislocation at the epiphyseal line, more or less strict bed rest for several months has to be enforced in some cases.

Influence of Mental Processes on Pulse and Respiration.—Summarized on page 1431.

Radiotherapy of Mammary Cancer.—Jolles applied both the roentgen and radium rays in the inoperable case described, and reports it as a clinical cure under radiotherapy for nearly three years to date.

April 17, 1920, **1**, No. 16

*Quantitative Technic for Sachs-Georgi Test. S. T. Bok.—p. 1328.
Ultimate Outcome After Tonsillectomy. H. Burger.—p. 1339.
*Acetone in Spinal Fluid from Standpoint of Functions of the Choroid Plexus. J. Koopman.—p. 1346.
Present Status of Vitamin Question. B. M. van Driel.—p. 1350.

Quantitative Technic for Precipitation Test for Syphilis.—Bok explains that the Sachs-Georgi reaction is like the first phase of the Wassermann reaction only much more intense. This precipitation of colloids is merely a chemical process, and can thus be studied and afford a deeper insight into the nature of syphilis than the tests which superpose two biologic processes. He describes a modification of the technic which allows quantitative classification of the findings, saying that the original qualitative technic is absolutely unreliable. The nonspecific reactions which occur only with 0.1 or 0.2 can be disregarded; with syphilis the index is higher than this. The test is more sensitive than the Wassermann and is simpler and takes less time. A normal beef heart provides a sensitive reagent for the test, and the cerebrospinal fluid is used undiluted in a set of five test tubes.

Acetone in the Spinal Fluid.—Koopman reports that 10 or 15 c.c. of acetone injected subcutaneously or by the vein did not pass into the cerebrospinal fluid, while inhaled chloroform was constantly found in it. His tests were made on six rabbits. In a fatal case of hemorrhage in the suprarenal, he found 12 mg. of acetone per liter in the spinal fluid, and occasionally in epileptics, he detected acetone in the spinal fluid. The intrameningeal pressure of the fluid was always abnormally high in the cases of diabetic coma he has examined. With severe acidosis, but no coma, he has never found the spinal fluid normal when the pressure was high, but in three cases he witnessed the prompt rise in the pressure when the fluid contained acetone and sometimes diacetic acid, and the pressure was normal when first examined. This suggests that the acetone irritates the choroid plexus and whips it up to secrete more of the cerebrospinal fluid. The same

may occur with urea, chlorids and albumin, and this has suggested the question whether the choroid plexus functioning may not be compared to that of the kidney, and whether it may not function vicariously for the kidneys to a certain extent in some conditions. He adds that this theoretical assumption justifies tests of the permeability of the choroid plexus along the lines of the functional kidney tests, and also anatomic study of the choroid plexus in cases of death from uremia or diabetic coma.

Hospitalstidende, Copenhagen

Feb. 25, 1920, **63**, No. 8

*Is the Lasègue Symptom from the Nerves or the Muscles? J. Helweg. —p. 113. Begun in No. 7, p. 97.

The Lasègue Sign in Sciatica.—Helweg presents an array of arguments to prove that the pain with the Lasègue sign is from the muscles, not from the nerves. He insists that the sciatic nerve is not responsible for the pain experienced when the extended leg is lifted passively from the plane of the bed, the knee still extended, and declares that he does not know of a single instance on record of lesions having been found in the sciatic nerve of persons who had suffered from sciatica during life. He also recalls that the sciatic nerve is accessible to direct pressure only in the popliteal space, where the popliteal nerves can be palpated. In his examination of 300 patients with sciatica, he never found the popliteal nerves more sensitive to pressure on the side of the sciatica than on the sound side. Tenderness along the course of the sciatic nerve may be due to the superposed muscles, but there is no evidence to date that it is due to the sciatic nerve itself.

March 3, 1920, **63**, No. 9

*General Arc Light Treatment of Laryngeal Tuberculosis. N. R. Blegvad.—p. 129. Begun in No. 6, p. 81.

Phototherapy of Laryngeal Tuberculosis.—Blegvad here describes his success in 52 cases of laryngeal tuberculosis in which treatment was with general exposures to the carbon arc light. Each case is reported in detail, with illustration of the findings before and after in a number. The patient reclines, undressed, under the light from four powerful (20 amperes) arc lights, four patients at a time sharing the light bath. From fifteen minutes at first, the exposures are lengthened in a week to an hour and were never given longer than this. Among the 74 patients thus treated, the laryngeal tuberculosis healed completely in 17. In 16 the tuberculous process continued its course unaffected. Most of the patients had concomitant pulmonary tuberculosis, and in an advanced stage in some. The ulcerative processes in the larynx promptly subsided under the phototherapy, sometimes supplemented with local measures, especially the galvanocautery applied deep in the lesion, according to Grünwald's method. The course of treatment lasted from two to four, six or more months; some of the patients took two courses with several months' interval.

Hygiea, Stockholm

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Parenteral Injections of Milk in Treatment of Infectious Diseases. I. Bratt.—p. 177.

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Volvulus of Sigmoid Flexure.—Summarized May 1, 1920, p. 1287, when published elsewhere.

Retrograde Incarceration of Inguinal Hernia.—Mamen compares a case which he reports in detail with the 62 cases of Pólya's international compilation; the ages ranged from 7 to 76. The 2 cases in which no operation was attempted terminated fatally the third and fourth days. The intestine in the hernia forms a W, the center loop usually projecting back into the abdominal cavity. The intestine was considered reducible in 31 of the cases, but 4 in this group died. In 3 of the cases there were three loops of intestine involved. The hernia in these cases is usually very large and of long standing. In some of the cases the abdominal wall protruded above the hernia, and a palpable tender tumor was evident in some, as in Mamen's own case. If more than one loop is found in a hernia, further investigation is imperative.

Treatment of Joint Lesions.—Usland has been converted to Willems' method of early active exercise of the suppurating joint by his success in the case of a boy of 10 with a purulent process in the knee which had been cut by a fall on a broken bottle. The immobilizing bandage and the catgut sutures were removed on account of the streptococcus infectious process, nine days after the accident, and active movements of the knee were made every hour. The temperature dropped at once with the active movements. The boy was able to flex his knee to 90 degrees without pain by the second day, and to 180 degrees the sixth day, and was up and about in less than two months. By the end of the two months the skin had healed completely and the knee was so flexible that the boy could touch his nates with his heel. The ideal drainage of the joint under the influence of the active movements seems to be the main element in the favorable outcome, as also the remarkable absence of pain in comparison to the pain in an immobilized joint.

Vagitus Uterinus.—Gjersøe reports that during forcible delivery of a primipara, when the hand was introduced into the uterus a cry was heard from the interior of the uterus, clearly audible to the nurse and the two assistants, and it was repeated several times in the course of ten minutes. Extraction finally succeeded, with forceps, and mother and child are doing well. Fully twenty minutes elapsed between the first vagitus uterinus and the extraction, but the child was not especially asphyxiated and no attempt at resuscitation was required, the child screaming at once. The entering hand had evidently introduced air into the uterus. The cry testifies that a child can be born with air in its lungs, but this can scarcely occur without artificial measures to aid delivery.

Diabetes and Influenza.—Motzfeldt remarks that Joslin in his compilation of 1,000 cases of diabetes was not able to trace it to an infectious disease in more than 36 cases. During the influenza epidemic of the nineties, several reported instances of diabetes following influenza, but in the recent epidemic he knows of only 2 published cases of the kind, and in these it was merely the exacerbation of latent diabetes. He here relates 4 cases in which the first symptoms developed directly after an attack of influenza, and in one of the cases, there was pain in the tender pancreas. The patients were 14, 15, 20 and 35 years of age, and the diabetes was mild; reexamination from ten to eighteen months later showed tolerance for 150, 300 or 500 gm. bread, and in some, alimentary glycosuria.

Methyl Alcohol Intoxication and Blindness.—Harboe reports a case in which the man was under observation for a week before the cause of the disturbances was discovered, the man denying drinking liquor. The bottle from which he had imbibed was finally found and still contained some of the "spirit" which proved to be pure methyl alcohol. He could count fingers at half a meter with the right eye and with the left detect screening of the light at the same distance. The visual field was much restricted. Nine charts of the fields are reproduced showing the gradual improvement, but by the end of four months there was still some paresis of accommodation. There were no signs of the usual retrobulbar neuritis at first, but some atrophy of the optic nerve finally became evident. Treatment is usually with lavage of the stomach and enemas with measures to induce diaphoresis. In conclusion, Harboe cites the literature on poisoning by wood alcohol, and mentions Kafka's report in 1919 of eleven cases of retrobulbar neuritis in which exclusion of all other causes seemed to point to this.